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DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

FLOODS IN INDIANA, JUNE-AUGUST 1979

Robert L. Gold and Stephen W. Wolcott

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CONTENTS

	Page
Metric conversion factors	v
Abstract	1
Introduction	1
Acknowledgments	1
Storm on June 8-9, 1979	2
Storm on July 12-14, 1979, caused by Hurricane Bob	2
Storm on July 25-28, 1979, caused by the stationary front and Hurricane Claudette	8
Meteorological summary	8
Storm damage	12
Hydrologic data	17
Summary of the hydrologic data	39
References	40

ILLUSTRATIONS

		Page
Figures 1-10.	Maps showing:	
	1. Precipitation and frontal boundary, June 8, 1979	3
	2. Precipitation and frontal boundary, June 9, 1979	4
	3. Forty-eight-hour precipitation totals, June 8-9, 1979	5
	4. Approximate eastern standard times and positions of the surface low-pressure center of the remnants of Hurricane Bob	6
	5. Seventy-two-hour precipitation totals, July 12-14, 1979	7
	6. Ninety-six-hour precipitation totals, July 25-28, 1979	9
	7. Average precipitation for June period of record	10
	8. Total precipitation for June 1979	11
	9. Average precipitation for July period of record	13
	10. Total precipitation for July 1979	14
	11. Photograph of Main Street, English, Ind., after crest of flood in July 1979	15
	12. Photograph showing culvert damaged by flood on July 26, 1979, State Highway 145 near French Lick, Ind	16

ILLUSTRATIONS--Continued

		Page
Figure		
13-20.	Discharge hydrographs of:	
	13. Whitewater River near Economy, Ind.....	27
	14. White Lick Creek at Mooresville, Ind.....	28
	15. Busseron Creek near Hymera, Ind.....	29
	16. Busseron Creek near Carlisle, Ind.....	30
	17. Stephens Creek near Bloomington, Ind.....	31
	18. Patoka River near Hardinsburg, Ind.....	32
	19. Hall Creek near St. Anthony, Ind.....	33
	20. South Fork Patoka River near Spurgeon, Ind.....	34
21-23.	Water levels at observation wells:	
	21. Orange 2.....	35
	22. Morgan 4.....	36
	23. Harrison 8.....	37
24.	Map showing locations of streamflow stations, reservoirs, and observation wells.....	38

TABLES

			Page
Table	1.	Summary of flood stages and discharges for June-August 1979.	18
	2.	Monthly discharges at selected sites, June through August 1979.....	25
	3.	Reservoir volumes for selected sites, June through August 1979.....	26
	4.	Locations of streamflow stations used in this report.....	41
	5.	Locations of reservoir sites used in this report.....	63
	6.	Locations of observation wells used in this report.....	64

METRIC CONVERSION FACTORS

The inch-pound units used in this report can be converted to the metric (S.I.) system of units as follows:

Multiply inch-pound unit	By	To obtain metric unit
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)
cubic foot per second (ft^3/s)	0.0283	cubic meter per second (m^3/s)

FLOODS IN INDIANA, JUNE-AUGUST 1979

By Robert L. Gold and Stephen W. Wolcott

ABSTRACT

This report documents rainstorms and resultant floods in central and southern Indiana during the summer of 1979. Major flooding was caused by three storms, one in June and two in July 1979, centered primarily in central and southern Indiana. Peak discharge exceeded the 100-year recurrence interval at 16 sites in this area. State Civil Defense officials estimated that almost 50-million dollars damage was attributable to the July floods.

Hydrologic data have been tabulated for streamflow sites in the areas of flooding. Reservoir storage volumes, observation-well data, rainfall totals, and discharge hydrographs are presented to show the intensity and time of the storms and resultant floods.

INTRODUCTION

This report documents rainstorms and attendant floods in central and southern Indiana during the summer of 1979. The floods were significant in both magnitude (16 exceeding a 100-year recurrence) and areal extent across the State.

Acknowledgments

The National Oceanographic and Atmospheric Administration provided the precipitation data, radar summaries, and frontal-boundary data; the U.S. Army Corps of Engineers provided stages and capacity tables of reservoirs; Civil Defense officials provided estimates of damages caused by floods; and the newspaper, Hard Times, Marengo, Ind., provided the photograph of Main Street, English, Ind., used in the report.

STORM ON JUNE 8-9, 1979

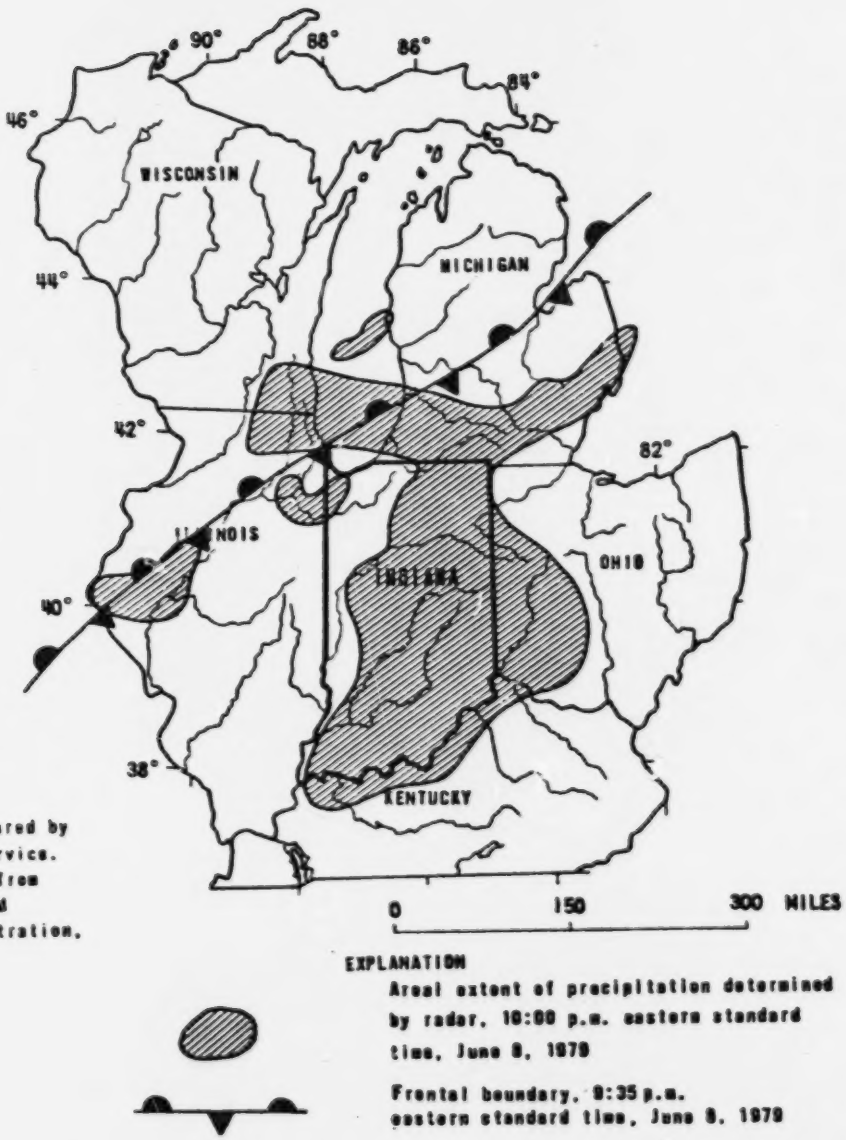
The storm on June 8-9, which contributed a large part of the total rainfall in June, resulted from a stationary front. The frontal boundary entered northwest Indiana as a cold front at approximately 7:00 p.m. eastern standard time, June 8. Extensive thunderstorm activity in southern Indiana and western Kentucky preceded the front. At approximately 10:00 p.m., eastern standard time, June 8, the cold front began to slow. Precipitation continued to fall, as the front stalled.

Precipitation and frontal boundaries of the storm at selected times on June 8 and 9 are shown in figures 1 and 2. Although thunderstorms were active over much of Indiana (fig. 1), rainfall was most intense in the southern part of the State (fig. 2). Radar summaries before and after 3:35 a.m. eastern standard time on June 9 closely resembled the pattern shown in figure 2. Total precipitation for June 8 and 9 is shown in figure 3.

STORM ON JULY 12-14, 1979, CAUSED BY HURRICANE BOB

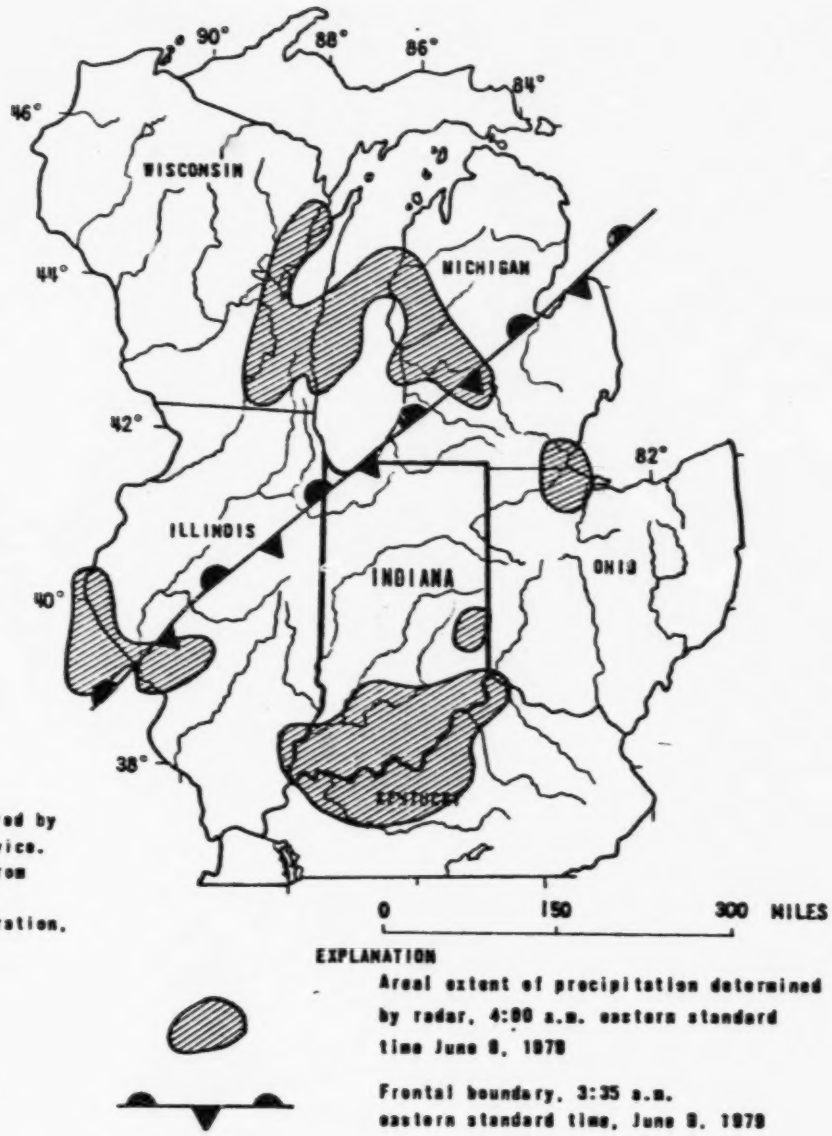
Precipitation from the remnants of Hurricane Bob resulted in the second major storm during the summer of 1979 in Indiana. The hurricane, after traveling through the Gulf of Mexico, reached the Gulf Coast States in the early morning hours of July 11. After the hurricane left the warm, smooth gulf waters, its available supply of energy was cut off. The winds subsided greatly; however, the rain continued, although at a lesser rate. The upper-level winds, blowing strongly from the southwest, placed the now downgraded hurricane on a direct path toward the Ohio River valley. During the early morning of July 12, the rain from the storm began to fall on southern Indiana. This happened after strong surface convergence north of the storm's low pressure center provided the necessary upward vertical motion needed to trigger thunderstorm activity amidst moderate rain showers throughout central Indiana. A squall line stretching west to east across the central part of the State was analyzed by the National Weather Service at 1:00 and 4:00 p.m., July 12. As the low pressure center moved across the State (fig. 4), rain continued to fall at a moderate rate throughout the night and into the early morning of the next day. Finally, during the afternoon of July 13, the precipitation temporarily subsided. With the air and ground already saturated, an advancing cold front began to induce additional rainfall and flooding throughout the streams of Indiana.

The total precipitation during July 12-14 is shown in figure 5. The pattern represents rainfall from the remnants of Hurricane Bob and the subsequent cold front. However, the pattern was not greatly affected by the cold front.



Data from maps prepared by National Weather Service. Maps are available from National Oceanic and Atmospheric Administration, Ashville, N.C.

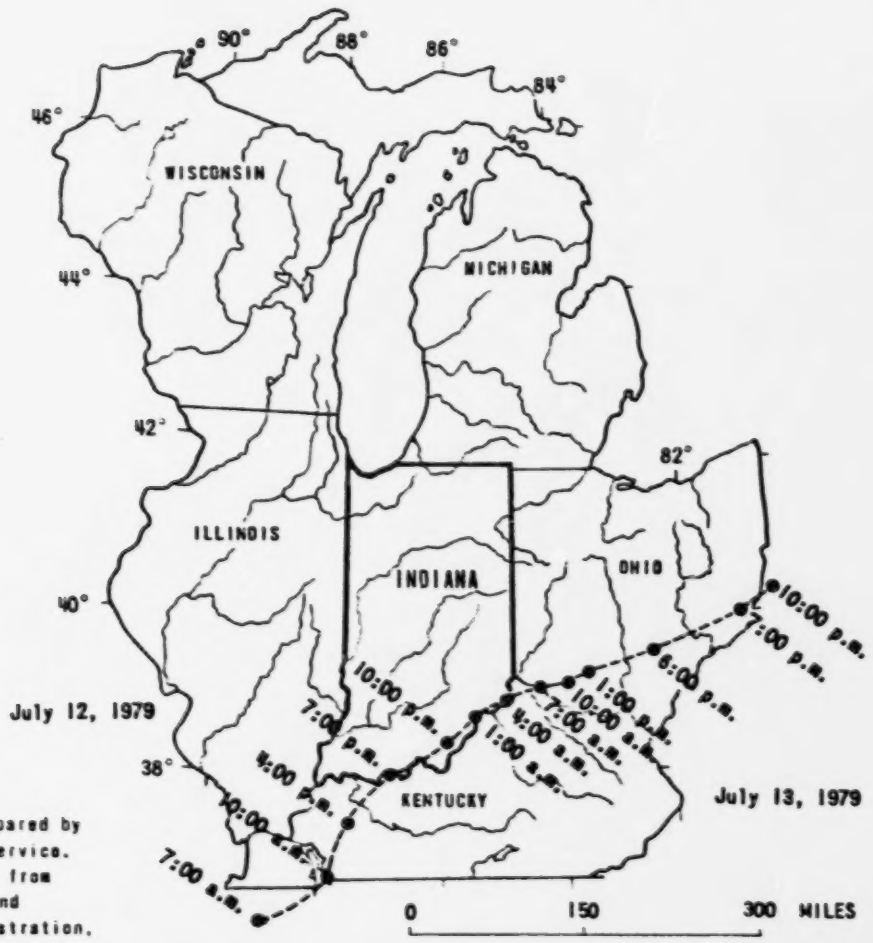
Figure 1. — Precipitation and frontal boundary, June 8, 1979.



Data from maps prepared by National Weather Service. Maps are available from National Oceanic and Atmospheric Administration, Ashville, N.C.

Figure 2. — Precipitation and frontal boundary, June 8, 1978.

Figure 3. -- Forty-eight-hour precipitation totals, June 8-9, 1979.



Data from maps prepared by National Weather Service. Maps are available from National Oceanic and Atmospheric Administration, Ashville, N.C.

Figure 4.-- Approximate eastern standard times and positions of the surface low-pressure center of the remnants of Hurricane Bob.

Figure 5.-- Seventy-two-hour precipitation totals, July 12-14, 1979.

STORM ON JULY 25-28, 1979, CAUSED BY THE STATIONARY FRONT AND HURRICANE CLAUDETTE

The combined effect of the precipitation from a stationary front and the remnants of Hurricane Claudette resulted in Indiana's third and most destructive storm of the summer. During the early afternoon on July 25, a line of thunderstorms oriented southwest to northeast ahead of a stationary front produced heavy rainfall on central-southern Indiana. Only 11 days earlier, light scattered rainshowers and precipitation from the remnants of Hurricane Bob had saturated the ground. The rain continued throughout the night at a lessened rate and until the morning of July 26, when damaging flash floods struck the Crawford County area. Rate of precipitation decreased slightly during the day but increased at night in the vicinity of Gibson and Pike Counties. The rain continued intermittently throughout the southern two-thirds of the State until late afternoon on July 28.

The primary cause of the excessive precipitation was the strong flow of moist southerly air being forced to lift and overrun slightly cooler drier air from the north. Unlike the earlier storms in June and July, no strong upper-level winds were associated with the precipitation. Hurricane Claudette, with its strong counter-clockwise motion, moved very slowly northward from the Gulf Coast and pushed large quantities of moisture northward in the process. The total precipitation contributed by the showers and thundershowers from the stationary front and the remnants of Hurricane Claudette is shown in figure 6.

METEOROLOGICAL SUMMARY

Total precipitation during June and July 1979 greatly exceeded average rainfall for large parts of central and southern Indiana. The three major storms contributed substantially to the total. However, daily thunderstorms also helped make June and July one of the wettest periods on record.

Figure 7, a map of the average precipitation for the June period of record, was constructed with data from rainfall stations having lengths of record equal to or greater than 25 yr. If this map is compared with figure 8, the June 1979 totals, the influence of the storm on June 8, 1979, can be seen.

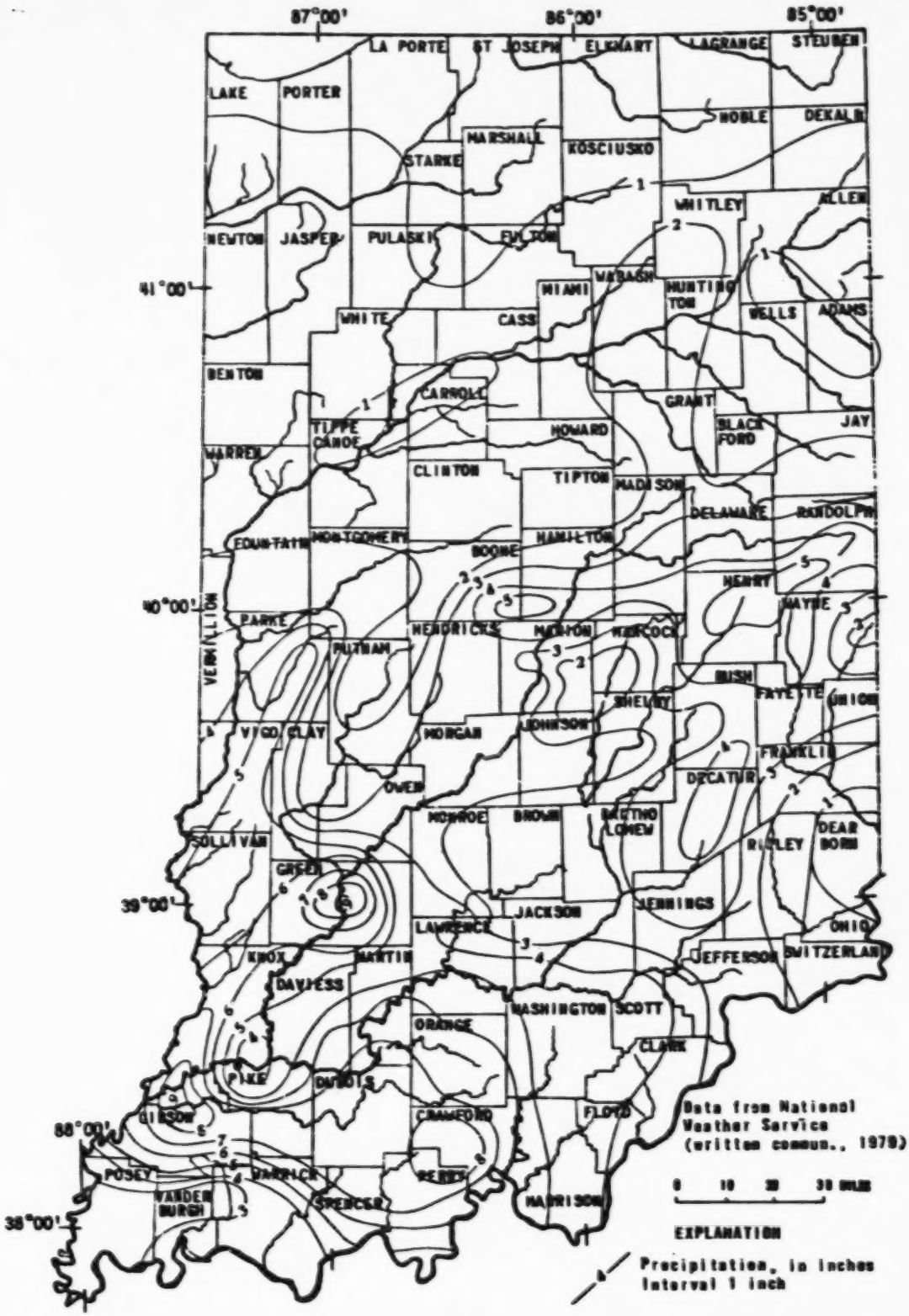


Figure 6. -- Ninety-six-hour precipitation totals, July 25-28, 1978.

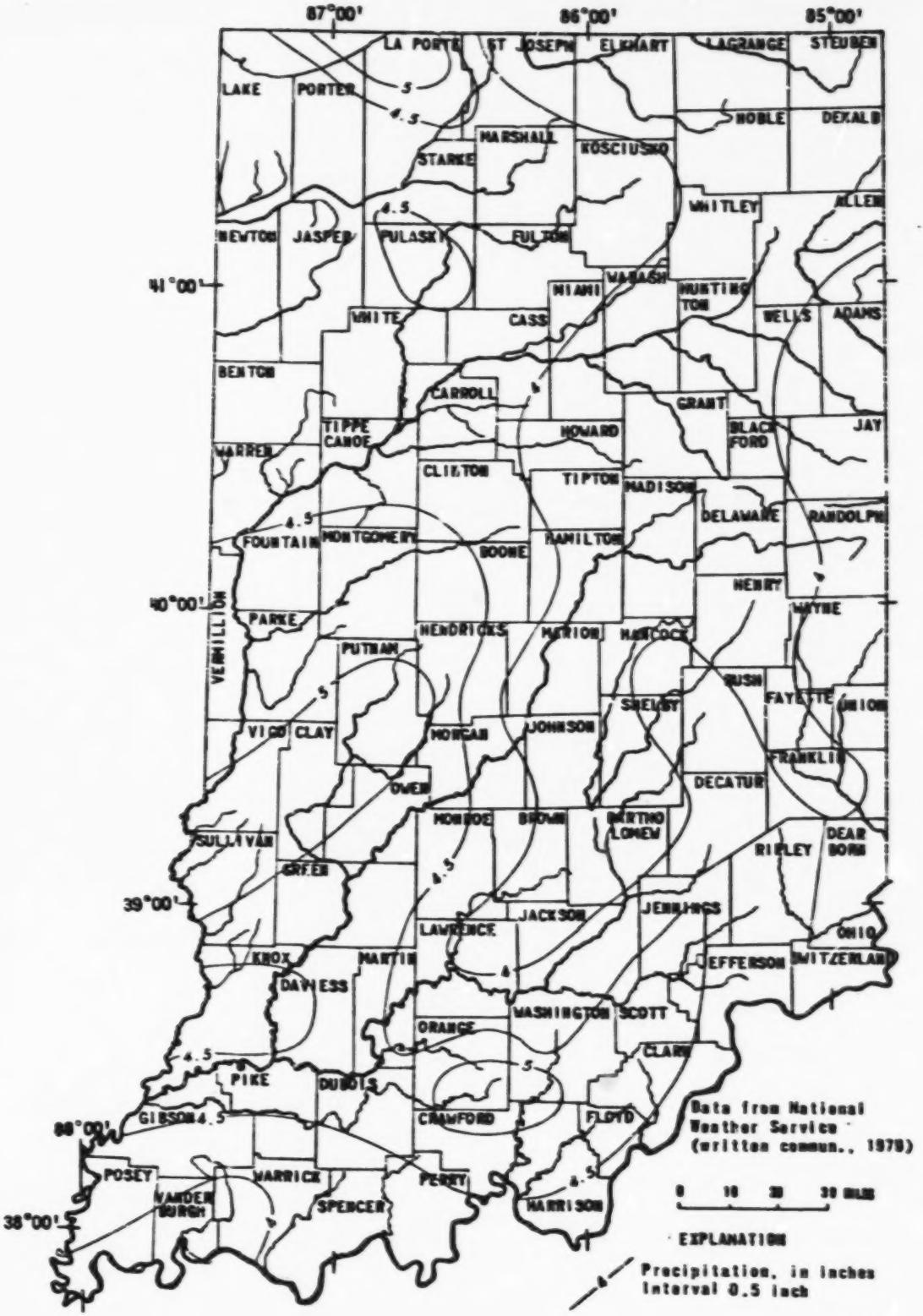


Figure 7. -- Average precipitation for June period of record.

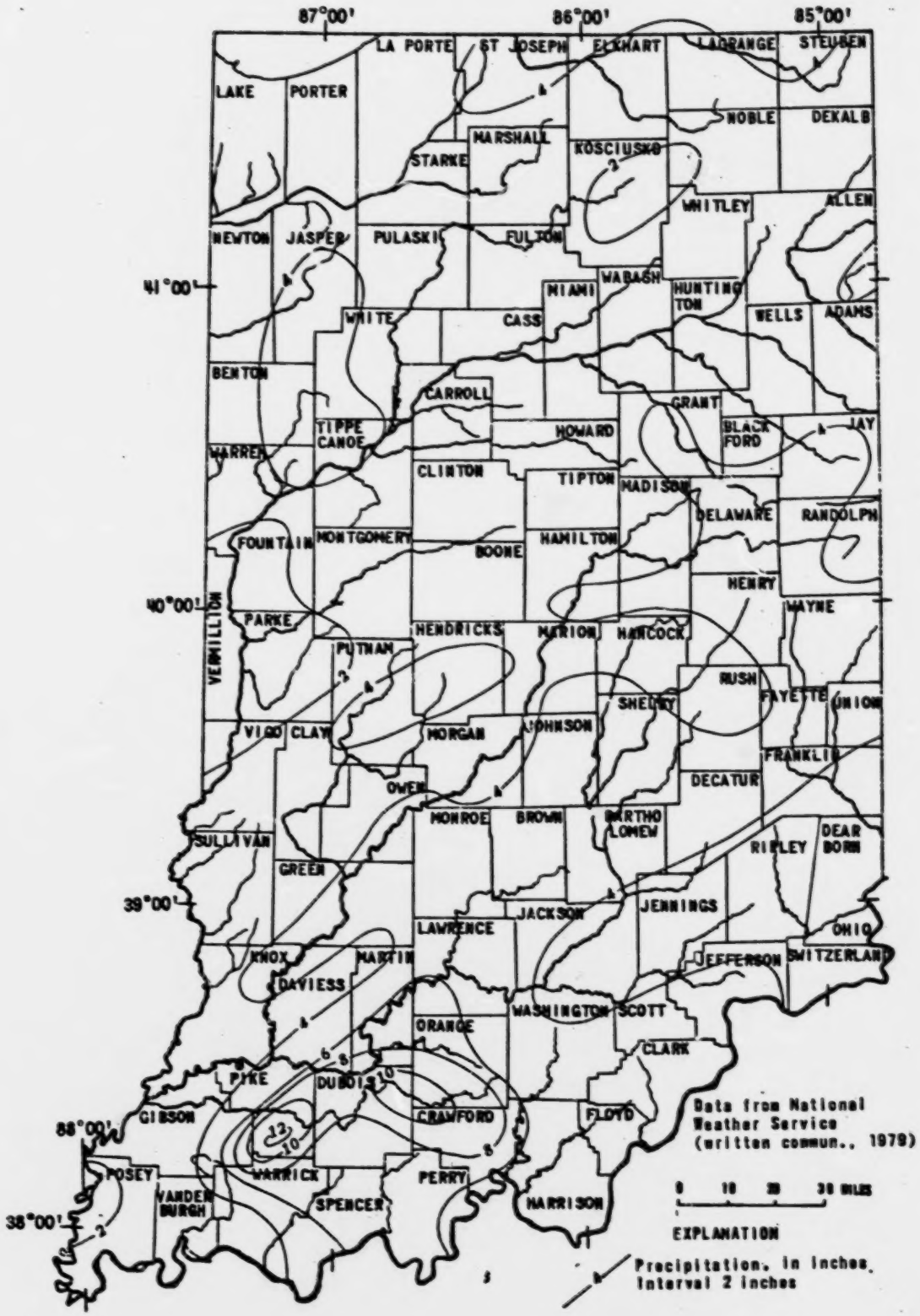


Figure 8.— Total precipitation for June 1979.

Average precipitation for July (fig. 9), compared with the total for July 1979 (fig. 10), shows that July 1979 in Indiana was exceptionally wet. Precipitation at isolated locations in Pike, Spencer, Greene, and Owen Counties was as much as four times the average. Again, similar to June totals, quantities of precipitation in northern Indiana were the same or less than the average rainfall.

STORM DAMAGE

The flooding caused by the storm on June 8-9, 1979, was centered in the southwest part of the State. The area of major flooding extended southwest from the town of English, in Crawford County, to St. Meinrad and from St. Meinrad through the Anderson River valley to the Ohio River. Interstate 64 near Lynnville was closed temporarily, owing to high water. In addition, flooding in English, St. Meinrad, and St. Anthony damaged many houses and businesses.

The intensity of the rains spawned by Hurricane Bob on July 12-14 was greatest in the central part of the State. The greatest increases in flow were recorded at sites in the central part of the White River and East Fork White River basins. Nearly all residents in Helmsburg, Trevlac, and other communities near Lake Lemon, all in Brown County, had to be evacuated. In Indianapolis, about 20 streets had to be closed, owing to the high water.

The effects of intense rains on July 26-28, resulting in part from Hurricane Claudette, were greatest in the Busseron Creek and Patoka River basins and the Ohio River tributaries downstream from Louisville, Ky. Hardest hit were the towns of English (fig. 11), Marengo, and Milltown, in Crawford County. Floodwater as deep as 10 ft forced 500 people from their homes in those areas. State Highway 145 south of French Lick was closed, owing to the destruction of a culvert (fig. 12). At Princeton, in Gibson County, a 7½-inch rainfall submerged sewer lines on the city's south side and forced evacuation of 250 residents.

In a letter requesting disaster relief from the President, Governor Otis R. Bowen cited Civil Defense estimates of damage in Indiana from the July 1979 storms as $11,450,500 to public property (bridges and roads), $6,474,000 to private property, and $31,343,500 to crops, or a total of slightly less than 50 million dollars.

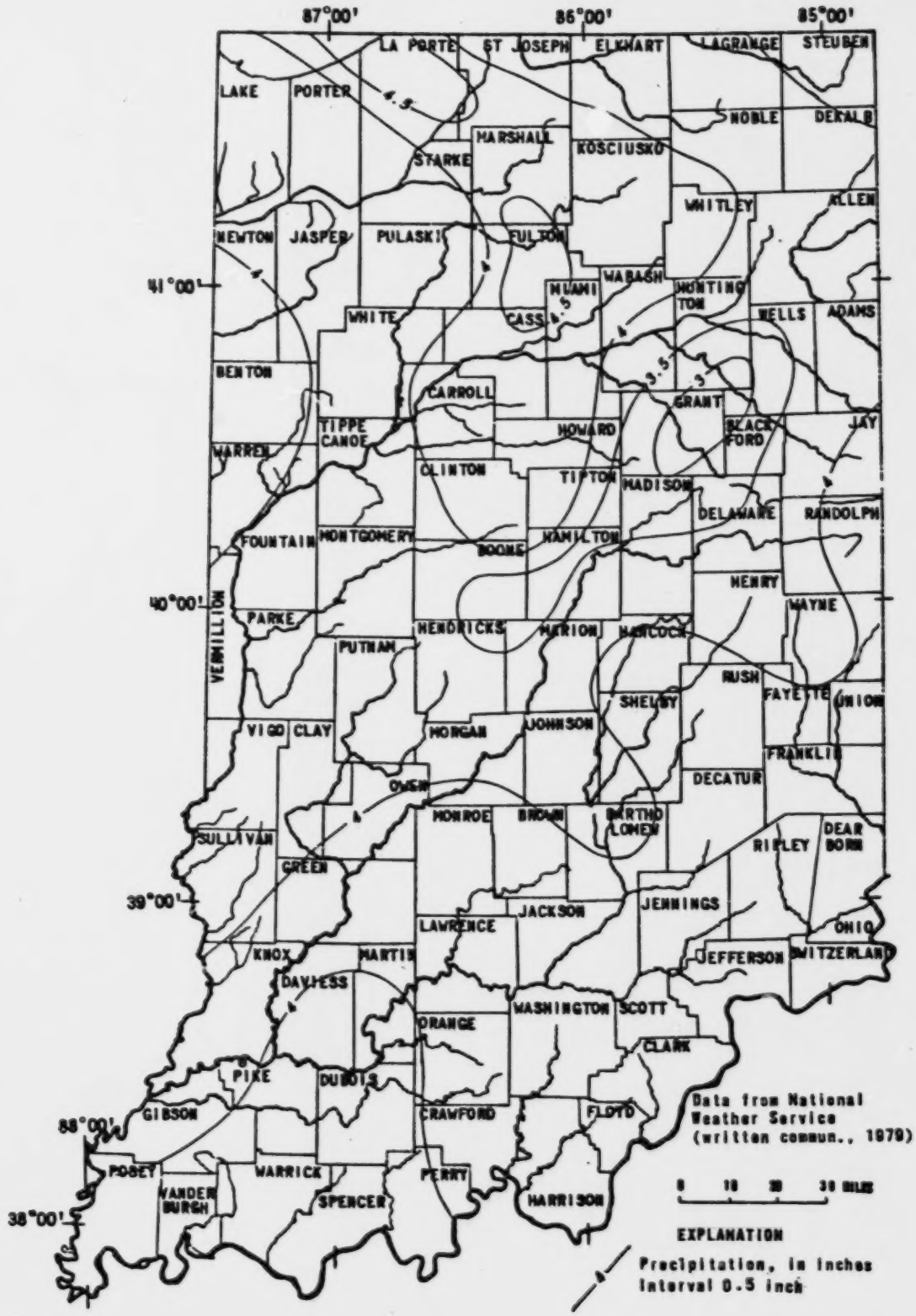


Figure 9. -- Average precipitation for July period of record.

Figure 10.— Total precipitation for July 1979.

Figure 11. -- Main Street, English, Ind., after crest of flood in July 1979. Photograph courtesy of *Hard Times*, edition of August 1, 1979, a weekly newspaper, Marengo, Ind.

Figure 12. -- Culvert damaged by flood on July 26, 1979, State Highway 145 near French Lick, Ind. (looking north).

HYDROLOGIC DATA

The hydrologic data have been divided into five groups. The first (table 1) is a tabulation of instantaneous peak discharges recorded at the indicated stream sites during the 1979 summer. Previously known maximum flood peaks have been included.

The second group (table 2) is a tabulation of the mean monthly discharges recorded at the indicated gaging stations for the months June through August. Mean monthly discharges for both the period of record and 1979 have been listed. The monthly mean discharges for June 1979 are generally less than those for the period of record at half of the sites. However, monthly mean discharges for July and August 1979 at all the sites listed greatly exceed the values for the same months for the period of record.

The third group (table 3), a tabulation of reservoir storage volumes, emphasizes the great quantities of water accumulated during the flood. Volumes are presented for the end of each month and the peak for the summer.

The fourth group (figs. 13-20) consists of discharge hydrographs for eight selected continuous-recording-gaging stations from June through August 1979. These hydrographs illustrate the timing of the flood peaks in different areas of the State.

Lastly, the fifth group (figs. 21-23) consists of water levels in three observation wells plotted for the summer months in the affected areas. The plots indicate that the periods of major rainfall caused great increases in ground-water levels. The datum used in this report is the National Geodetic Vertical Datum of 1929, abbreviated as NGVD elsewhere in the report.

The locations of the sites for which data have been included in this report are shown in figure 24. Descriptions of the locations are listed in tables 4-6.

Table 1.--Summary of flood stages and discharges for June-August 1979

[Data collected by U.S. Geological Survey]

Station no.	Stream and place of determination / Station name	Drainage area (mi^2)	Period of record	Maximum flood previously known				Maximum peaks June - August 1979				Recurrence interval (yr)
				Date	Gage height (ft)	Discharge (ft^3/s)	Discharge ($(ft^3/s)/mi^2$)	Date	Gage height (ft)	Discharge (ft^3/s)	Discharge ($(ft^3/s)/mi^2$)	
03274650	Whitewater River near Economy, Ind.	10.4	1971-79	2-23-75 8-28-78	8.00 8.14	820	78.8	8-20	8.85	1,100	106	80
03274730	Whitewater River tributary near Hagerstown, Ind.	.12	1973-79	5-23-78	6.95	28	233	8-1	6.65	23	192	11
03274750	Whitewater River near Hagerstown, Ind.	58.7	1971-79	1-25-76	10.89	2,300	39.2	8-1	11.24	2,200	37.5	8
03274880	Greens Fork tributary near Lynn, Ind.	.78	1973-79	3-14-78	8.24	270	346	8-1	8.86	305	391	32
03274950	Little Williams Creek at Connersville, Ind.	9.16	1969-79	6-22-74	10.13	3,560	389	8-22	6.94	1,240	135	5
03275000	Whitewater River near Alpine, Ind.	529	1929-79	1-14-37	16.61	37,100	70.1	7-29	13.84	11,600	21.9	<5
03275600	East Fork Whitewater River at Abington, Ind.	200	1966-79	7-20-69	16.18	13,400	67.0	7-29	13.61	6,990	35.0	<2
03275800	West Run near Liberty, Ind.	.26	1972-79	6-22-74	10.70	240	923	8-9	5.30	30	115	<2
03275900	Templeton Creek near Fairfield, Ind.	5.39	1973-79	6-22-74	17.25	1,020	189	7-29	10.08	330	61.2	2
03276000	East Fork Whitewater River at Brookville, Ind.	380	1954-79	1-21-59 5-24-62	17.35	36,100	95.0	8-9	7.64	1/3,890	10.2	<2
03276500	Whitewater River at Brookville, Ind.	1,224	1924-79	1-21-59 3-25-13	27.78 39.0	81,800	668	7-29	10.54	1/14,500	11.8	<2
03276640	Tanners Creek tributary near Lawrenceburg, Ind.	.19	1973-79	6-22-74	15.59	300	1,580	7-28	14.57	270	1,420	6
03276700	South Hogan Creek near Dillsboro, Ind.	38.1	1962-79	4-29-70 1-21-59	12.7 14.00	13,000 16,300	341 428	8-1	9.92	6,780	178	4
03276770	Laughery Creek tributary near Napoleon, Ind.	.11	1973-79	6-19-78	7.77	58	527	7-28	7.05	39	355	3
03276950	Uhlman Creek tributary near Avonburg, Ind.	.16	1973-79	4-2-77	7.75	63	394	7-28	7.71	60	375	5
03277000	Laughery Creek near Farmers Retreat, Ind.	248	1942-79	1-21-59	21.13	47,800	193	8-1	12.15	10,300	41.5	<2
03277030	Buck Run near Rising Sun, Ind.	.03	1973-79	5-5-77	9.68	18	600	7-4	6.65	12.5	417	4
03277250	Indian Creek tributary near Bennington, Ind.	.16	1973-79	9-12-74	6.52	66	412	7-28	5.94	34	212	<2
03291780	Indian-Kentuck Creek near Canaan, Ind.	27.5	1970-79	2-23-75 2-22-71	7.42 11.02	3,220	117	8-1	11.27	5,600	204	>100
03292350	Flag Run tributary near new Washington, Ind.	.16	1973-79	7-21-73	7.71	51	319	6-9	5.35	5.8	36.2	<2
03294000	Silver Creek near Sellersburg, Ind.	189	1955-79	1-22-59	30.89	19,600	104	6-9	17.23	3,400	18.0	<2
03302220	Buck Creek near New Middletown, Ind.	2/65.2	1970-79	4-2-70	14.40	12,700	195	7-26	11.95	7,920	121	4
03302300	Little Indian Creek near Galena, Ind.	16.1	1969-79	7-21-73	9.30	5,500	342	7-27	7.71	3,570	222	3
03302350	Georgetown Creek tributary near Georgetown, Ind.	.56	1973-79	4-24-75	11.11	200	357	7-27	6.35	74	132	<2
03302500	Indian Creek near Corydon, Ind.	2/129	1944-79	3-5-64	22.64	26,700	207	7-26	16.82	8,160	63.2	2
03302680	West Fork Blue River at Salem, Ind.	19.0	1971-79	7-10-74	12.29	4,430	233	7-27	9.54	2,260	119	3

Table 1.--Summary of flood stages and discharges for June-August 1979--Continued

Station no.	Stream and place of determination / Station name	Drainage area (mi^2)	Period of record	Maximum flood previously known				Maximum peaks June - August 1979				Recurrence interval (yr)
				Date	Gage height (ft)	Discharge (ft^3/s)	Discharge [(ft^3/s)/mi^2]	Date	Gage height (ft)	Discharge (ft^3/s)	Discharge [(ft^3/s)/mi^2]	
03302730	South Fork Blue River near Palmyra, Ind.	64.3	1974-79	4-24-75	21.90	8,300	129	7-26	20.15	3,100	48.2	2
03302800	Blue River at Fredericksburg, Ind.	2/283	1969-79	4-24-75 1-21-59	22.88 29.20	12,000	42.4	7-26	19.82	8,360	29.5	<2
033028535	Brandywine Fork near Marengo, Ind.	1.74	--------	--------	-----	--------	-----	7-26	-----	3/2,180	1,250	>100
033028535	Whiskey Run at Milltown, Ind.	34.9	--------	--------	-----	--------	-----	7-26	-----	3/10,800	309	50-100
03303000	Blue River near White Cloud, Ind.	2/476	1931-79	1-22-59	23.07	28,500	59.9	7-26	19.71	22,500	47.3	10
033031455	Bird Hollow Creek above Dog Creek near English, Ind.	3.17	--------	--------	-----	--------	-----	7-26	-----	3/4,000	1,260	>100
03303150	Bird Hollow Creek at English, Ind.	9.31	1974-79	4-24-75	16.10	5,520	593	7-26	17.80	3/8,500	913	>100
033031605	Little Blue River at English, Ind.	27.2	--------	--------	-----	--------	-----	7-26	-----	3/21,600	794	>100
033032705	Anderson River near Saint Meinrad, Ind.	125	--------	--------	-----	--------	-----	6-9	-----	1/14,100	113	50-100
03303300	Middle Fork Anderson River at Bristow, Ind.	398	1962-79	3-9-64 3-4-64 1-21-59	----- 19.33 20.0	6,360 15,000	160 377	6-9	17.13	3/3,020	75.9	4/50-100
03303400	Crooked Creek at Santa Claus, Ind.	7.86	1970-79	4-28-70	9.74	4,100	522	7-26	9.41	1,860	237	4
03303440	East Fork Crooked Creek tributary near Fulda, Ind.	.26	1973-79	8-24-77	10.60	182	700	7-26	10.02	160	615	6
03303900	Little Red Creek tributary near Heilman, Ind.	.25	1973-79	10-18-75	8.23	88	352	7-26	9.38	102	408	11
03339230	Woods ditch near Frankfort, Ind.	1.12	1972-79	6-32-78	11.59	350	312	7-26	5.64	8.5	7.68	<2
03339500	Sugar Creek at Crawfordsville, Ind.	509	1939-79	6-28-57 3- -13	14.48 17.3	26,300 36,000	51.7 70.7	7-26	5.13	5,670	11.1	<2
03340500	Wabash River at Montezuma, Ind.	11,118	1928-79	5-20-43 3-27-13	32.83 34.0	184,000 230,000	16.5 20.7	8-2	17.25	29,700	2.67	<2
03340800	Big Raccoon Creek near Fincastle, Ind.	139	1958-79	1-26-62 6-28-57	15.68 19.10	15,100 39,900	109 287	7-29	11.93	3,950	28.4	<2
03341150	Deneree Creek tributary near Byron, Ind.	.15	1973-79	7-8-78	7.80	105	700	7-27	6.48	52	347	<2
03341200	Little Raccoon Creek near Catlin, Ind.	134	1957-79	6-28-57	18.27	53,400	399	7-29	14.47	8,660	64.6	4
03341300	Big Raccoon Creek at Coxville, Ind.	448	1957-79	6-28-57	21.23	108,000	241	7-29	14.06	10,900	24.3	<2
03341387	Feather Creek near Clinton, Ind.	.72	--------	--------	-----	--------	-----	7-28	-----	3/525	729	>100
03341387	Feather Creek at Clinton, Ind.	3.59	--------	--------	-----	--------	-----	7-28	-----	3/1,350	376	50-100
03341500	Wabash River at Terre Haute, Ind.	12,265	1928-79	5-20-43 3-27-13	30.50 31.1	189,000 245,000	15.4 20.0	7-29	20.81	37,500	3.06	<2
03342000	Wabash River at Riverton, Ind.	13,161	1939-79	5-21-43 3-28-13	29.36 26.4	201,000 250,000	15.3 19.0	7-30	18.80	48,300	3.67	<2
03342100	Busseron Creek near Hymera, Ind.	16.7	1967-79	9-12-74	18.58	1,890	113	7-28	18.90	1,700	102	8

Table 1.--Summary of flood stages and discharges for June-August 1979--Continued

Station no.	Stream and place of determination / Station name	Drainage area (mi^2)	Period of record	Maximum flood previously known				Maximum peaks June - August 1979				Recurrence interval (yr)
				Date	Gage height (ft)	Discharge (ft^3/s)	Discharge ($(ft^3/s)/mi^2$)	Date	Gage height (ft)	Discharge (ft^3/s)	Discharge ($(ft^3/s)/mi^2$)	
03342150	West Fork Busseron Creek near Hymera, Ind.	14.4	1967-79	7-26-73	13.23	1,930	134	7-27	13.00	1,900	132	25
03342180	Kettle Creek tributary near Shelburn, Ind.	.48	1972-79	7-25-73	9.33	318	646	7-27	11.52	490	1,020	53
03342250	Mud Creek near Dugger, Ind.	11.9	1967-79	5-30-74	13.70	919	77.2	7-27	14.83	1,270	107	6
03342300	Busseron Creek near Sullivan, Ind.	138	1967-79	1-30-69	15.83	5,480	39.7	7-29	16.28	6,050	43.8	100
03342500	Busseron Creek near Carlisle, Ind.	228	1944-79	1-5-50	20.05	8,800	38.6	7-30	19.01	6,210	27.2	12
03343000	Wabash River at Vincennes, Ind.	13,706	1930-79	5-22, 23, 1913	29.33	189,000	13.8	8-2	19.79	46,200	3.37	<2
				3-29-13	26.3	255,000	18.6					
03346650	River Deshee tributary near Fritchton, Ind.	.82	1973-79	4-23-73	9.24	180	220	8-3	7.62	98	120	2
03347000	White River at Muncie, Ind.	241	1931-79	4-21-64	14.98	14,300	59.3	8-22	9.84	5,230	21.7	2
				1-15-37	21.07							
				3- -13	22.6	20,000	83.0					
03347500	Buck Creek near Muncie, Ind.	35.5	1955-79	4-21-64	13.96	1,780	50.1	8-21	11.24	860	24.2	2
03348000	White River at Anderson, Ind.	406	1932-79	4-21-64	19.41	18,700	46.1	8-22	11.70	7,080	17.4	2
				6-14-58	19.96							
				3-25-13	23.6	28,000	69.0					
03348020	Killbuck Creek near Gaston, Ind.	25.5	1969-79	3-16-78	11.07	412	16.2	8-20	9.16	268	10.5	2
				4-20-72	11.14							
03348350	Pipe Creek at Frankton, Ind.	113	1969-79	7-12-76	11.30	2,370	21.0	8-21	9.96	1,600	14.2	<2
				6-10-58	15.5							
03348700	White River tributary near Strawtown, Ind.	.42	1973-79	1-25-76	7.94	70	167	8-3	8.42	103	245	41
03349000	White River at Noblesville, Ind.	858	1947-79	4-22-64	21.31	26,800	31.2	8-3	12.82	6,780	7.90	<2
03349500	Cicero Creek near Arcadia, Ind.	131	1955-79	6-29-57	11.86	6,720	51.3	7-13	8.61	1,500	11.4	<2
				1- -37	15.6							
03349700	Little Cicero Creek near Arcadia, Ind.	40.4	1956-79	6-28-57	10.69	3,980	98.5	7-13	7.88	844	20.9	<2
03350100	Hinkle Creek near Cicero, Ind.	18.5	1956-79	6-28-57	8.45	4,920	266	7-28	6.29	1,780	96.2	3
03350500	Cicero Creek at Noblesville, Ind.	216	1951-79	6-28-57	15.26	9,800	45.4	7-13	11.77	2,980	13.8	<2
03350650	Stony Creek tributary near Lapel, Ind.	.46	1973-79	3-17-78	7.55	180	391	7-29	5.61	62	135	<2
03350700	Stony Creek near Noblesville, Ind.	50.8	1968-79	2-17-76	7.35	1,560	30.7	7-29	6.27	1,000	19.7	3
03351000	White River near Nora, Ind.	1,219	1930-79	5-19-43		32,400	26.6	7-28	10.37	8,300	6.82	<2
				4-23-64	18.65							
				3-26-13	22.4	58,500	48.0					
03351310	Crooked Creek at Indianapolis, Ind.	17.9	1970-79	6-26-78	13.31	5,500	307	7-13	8.65	1,210	67.6	2
03351400	Sugar Creek near Middletown, Ind.	5.80	1969-79	4-28-75	7.72	1,100	190	7-28	7.05	607	105	3

Table 1.--Summary of flood stages and discharges for June-August 1979--Continued

Station no.	Stream and place of determination / Station name	Drainage area (mi^2)	Period of record	Maximum flood previously known				Maximum peaks June - August 1979				Recurrence interval (yr)
				Date	Gage height (ft)	Discharge (ft^3/s)	Discharge ($(ft^3/s)/mi^2$)	Date	Gage height (ft)	Discharge (ft^3/s)	Discharge ($(ft^3/s)/mi^2$)	
03351500	Fall Creek near Fortville, Ind.	169	1942-79	4-21-64 3- -13	9.88 12	8,750	51.8	8-3	8.09	3,310	19.6	3
03352400	Blue Creek near Castleton, Ind.	.77	1972-79	6-26-78	7.12	72	93.5	6-9	7.18	76	98.7	20
03352500	Fall Creek at Millersville, Ind.	298	1930-79	5-28-56 3-26-13	13.53 16.3	12,900 22,000	43.3 73.8	7-29	10.09	4,500	15.1	3
03353000	White River at Indianapolis, Ind.	1,635	1904-06 1931-79	5-18-43 1-16-37 3-26-13	 21.57 30.0	37,200 70,000	22.8 42.8	7-28	14.97	18,900	11.6	<2
03353120	Pleasant Run at Arlington Ave. at Indianapolis, Ind.	7.58	1960-79	6-25-78 5- -56	13.86 16.0	2,600	343	8-1	10.34	1,590	210	10
03353160	Pleasant Run at Brookville, Rd. at Indianapolis, Ind.	10.1	1960-79	6-25-78	11.28	3,000	297	8-1	9.09	1,750	173	5
03353180	Bean Creek at Indianapolis, Ind.	4.40	1971-79	6-25-78	7.77	770	175	8-1	7.24	600	136	33
03353200	Eagle Creek at Zionsville, Ind.	103	1958-79	4-20-64 6-28-57	14.64 19.20	12,400	120	7-29	11.18	5,010	48.6	3
03353500	Eagle Creek at Indianapolis, Ind.	174	1939-79	6-28-57 3- -13	23.59 23.2	28,800	166	7-29	9.43	6,800	39.1	3
03353600	Little Eagle Creek at Speedway, Ind.	1/23.9	1960-79	6-26-78	12.13	3,250	136	7-28	12.07	3,290	138	100
03353620	Lick Creek at Indianapolis, Ind.	15.6	1971-79	6-25-78	9.61	2,500	160	8-1	8.10	1,840	-----	9
03353668	White Lick Creek tributary near Brownsburg, Ind.	.31	1972-79	6-25-78	7.61	180	581	7-13	6.39	92	297	>100
03353700	West Fork White Lick Lick Creek at Danville, Ind.	28.8	1959-79	7-14-62 6-28-57	11.32 16.0	3,330 6,660	116 231	7-13	12.13	3,040	106	17
03353800	White Lick Creek at Mooresville, Ind.	212	1958-79	3-4-63 6-28-57	22.95 22.5	18,000	84.9	7-13	23.31	19,000	89.6	44
03354000	White River near Centerton, Ind.	2,444	1947-79	4-22-24 3- -13	2/17.57 2/21.9	50,500 90,000	20.7 36.8	7-29	16.51	28,700	11.7	3
03354500	Beanblossom Creek at Beanblossom, Ind.	14.6	1952-79	6-23-60	11.78	8,140	558	7-13	10.45	1,980	136	2
03355000	Bear Creek near Trevlac, Ind.	6.94	1952-79	6-12-57	7.62	1,830	264	7-28	7.61	1,840	265	30
03356780	Limestone Creek tributary near Goasport, Ind.	.72	1972-79	8-6-77	7.73	250	347	7-28	6.15	105	146	2
03357000	White River at Spencer, Ind.	2,988	1925-79	5-15-33 1-16-37 3-26-13	23.2 28.5	59,400 100,000	19.9 35.5	7-15	21.90	30,600	10.2	2
03357350	Plum Creek near Bainbridge, Ind.	3.00	1970-79	6-30-77	5.75	744	248	7-28	4.25	449	150	4
03357420	Big Walnut Creek at Greencastle, Ind.	216	1975-79	3-14-78 6-28-57	13.55 24.1	8,350	38.7	7-29	13.66	6,080	28.2	2
03357500	Big Walnut Creek near Reelsville, Ind.	326	1949-79	6-28-57	18.63	27,400	84.0	7-29	14.44	7,610	23.3	<2
03358000	Mill Creek near Cataract, Ind.	245	1950-79	6-24-60	22.58	11,400	46.5	7-14	20.17	8,380	34.2	6

Table 1.--Summary of flood stages and discharges for June-August 1979--Continued

Station no.	Stream and place of determination / Station name	Drainage area (mi^2)	Period of record	Maximum flood previously known				Maximum peaks June - August 1979				Recurrence interval (yr)
				Date	Gage height (ft)	Discharge (ft^3/s)	Discharge [(ft^3/s)/mi^2]	Date	Gage height (ft)	Discharge (ft^3/s)	Discharge [(ft^3/s)/mi^2]	
03360000	Eel River at Bowling Green, Ind.	830	1931-79	1-4-50 8-18-75	23.53 30.0	34,000	41.0	7-29	20.25	13,300	16.0	4
03360100	Clear Branch at Cory, Ind.	.27	1973-79	7-21-73	8.21	90	333	7-28	7.02	51	189	<2
03360400	Doans Creek tributary near Doans, Ind.	.20	1973-79	2-22-75	7.81	102	510	7-29	8.27	120	600	13
03360500	White River at Newberry, Ind.	4,688	1928-79	5-21-43 3-27-13	24.19 27.5	76,900 130,000	16.4 27.7	8-2	21.67	48,700	10.4	4
03360600	Smothers Creek near Plainville, Ind.	33.0	1974-79	2-22-75	16.02	1,350	40.9	7-27	15.91	920	27.8	---
03361000	Big Blue River at Carthage, Ind.	184	1951-79	3-4-63	14.62	12,900	70.1	8-2	10.25	4,170	22.7	3
03361500	Big Blue River at Shelbyville, Ind.	421	1943-79	3-5-63 3- -13	17.70 20.2	15,800	37.5	7-30	14.15	6,250	14.8	<2
03361650	Sugar Creek at New Palestine, Ind.	93.9	1968-79	6-23-74 2-2-68	9.12 9.34	1,850	19.7	8-3	9.15	1,640	17.5	5
03361660	Little Sugar Creek tributary at Carrollton, Ind.	.70	1973-79	6-26-78	7.30	175	250	8-2	6.48	105	150	4
03361850	Buck Creek at Acton, Ind.	78.8	1968-79	7-20-69	14.99	5,300	67.3	8-2	11.08	2,450	31.1	2
03361890	Gilmore Creek near Hargersville, Ind.	.71	1973-79	6-26-78	10.93	312	439	7-14	8.13	160	225	5
03362000	Youngs Creek near Edinburgh, Ind.	107	1943-79	1-27-52	13.4	10,700	100	7-14	12.11	7,440	69.5	7
03362500	Sugar Creek near Edinburgh, Ind.	474	1943-79	5-29-56	18.38	27,600	58.2	7-14	13.30	8,170	17.2	<2
03363000	Driftwood River near Edinburgh, Ind.	1,060	1941-79	3-6-63 3- -13	16.97 20.3	40,500	38.2	7-30	14.08	13,500	12.7	<2
03363500	Flatrock River at St. Paul, Ind.	303	1931-79	1-5-49 3- -13	10.60 20.5	18,500	61.1	7-28	5.77	4,470	14.8	<2
03363900	Flatrock River at Columbus, Ind.	534	1968-79	5-25-68	15.87	20,000	37.5	7-30	13.03	10,500	19.7	3
03364000	East Fork White River at Columbus, Ind.	1,707	1948-79	3-6-63	16.23	52,300	30.6	7-30	10.25	21,700	12.7	<2
03364100	Tough Creek near Morristown, Ind.	1.46	1973-79	1-13-78	11.43	395	271	7-14	7.13	100	68.5	<2
03364200	Haw Creek near Clifford, Ind.	47.5	1968-79	5-24-68	13.9	2,560	53.9	7-28	12.45	1,970	41.5	<2
03364500	Clifty Creek at Hartsville, Ind.	91.4	1948-79	1-21-59	14.29	11,300	124	7-4	7.29	2,580	28.2	<2
03364570	Fall Fork Clifty Creek near Horace, Ind.	.83	1973-79	6-26-78	9.85	240	289	6-20	10.29	270	319	20
03365000	Sand Creek near Brewersville, Ind.	155	1948-79	1-21-59	21.70	19,900	128	7-29	11.55	4,740	30.6	<2
03365500	East Fork White River at Seymour, Ind.	2,341	1928-79	1-5-49 3-26-13	19.67 21.0	78,500 120,000	33.5 51.3	8-2	17.95	39,900	17.0	4
03366200	Harberts Creek near Madison, Ind.	9.31	1969-79	4-2-70	7.89	1,540	165	8-1	7.57	1,400	150	5
03366400	Lewis Creek tributary near Kent, Ind.	.16	1973-79	8-3-78	7.03	100	625	7-28	7.71	130	812	25

Table 1.--Summary of flood stages and discharges for June-August 1979--Continued

Station no.	Stream and place of determination / Station name	Drainage area (mi²)	Period of record	Maximum flood previously known				Maximum peaks June - August 1979				Recurrence interval (yr)
				Date	Gage height (ft)	Discharge (ft³/s)	Discharge [(ft³/s)/mi²]	Date	Gage height (ft)	Discharge (ft³/s)	Discharge [(ft³/s)/mi²]	
03366500	Muscatatuck River near Deputy, Ind.	293	1948-79	1-21-59	33.1	52,200	178	8-2	22.49	13,600	46.4	<2
03367600	Flat Creek tributary near Frankfort, Ind.	.34	1973-79	8-3-78	8.21	200	588	6-9	7.44	150	441	6
03368000	Brush Creek near Nebraska, Ind.	11.4	1955-79	5-24-68	11.40	3,440	302	8-1	10.04	2,540	223	6
03369000	Vernon Fork near Butlerville, Ind.	85.9	1942-79	1-21-59	25.41	26,200	305	8-1	14.10	6,550	76.3	<2
03369500	Vernon Fork at Vernon, Ind.	198	1940-79	1-21-59	32.83	56,800	287	8-1	19.81	16,300	82.3	7
03369700	Sixmile Creek tributary near North Vernon, Ind.	.39	1973-79	6-26-78	7.52	60	154	8-1	7.31	52	133	6
03370100	Blau ditch tributary near Crothersville, Ind.	1.31	1973-79	9-12-74	7.76	40	30.5	7-13	5.08	3.0	2.29	<2
03371500	East Fork White River near Bedford, Ind.	3,861	1940-79	5-12-64 5-11-61	 35.97	75,700	19.6	8-6	26.82	28,000	7.25	<2
03371520	Beck Creek at Leesville, Ind.	24.1	1971-79	7-21-73 1913	14.0 18.1	15,300	635	8-1	10.83	7,720	320	17
03371630	North Fork Salt Creek tributary near Nashville, Ind.	.22	1973-79	4-3-77	7.56	46	209	7-13	6.97	31	141	5
03371650	North Fork Salt Creek at Nashville, Ind.	76.1	1962-79	3-4-63 5-24-68	 16.00	7,500	98.6	7-13	13.79	5,990	78.7	4
03372300	Stephens Creek near Bloomington, Ind.	10.9	1971-79	4-2-77	11.52	2,370	217	7-13	13.18	5,400	495	>100
03372680	Clear Creek tributary near Bloomington, Ind.	.38	1972-79	5-29-74	7.02	72	189	7-13	7.74	110	289	19
03373200	Indian Creek near Springville, Ind.	60.7	1961-79	3-9-64	12.95	6,450	106	8-8	10.54	4,100	67.6	2
03373240	Spring Creek tributary near Springville, Ind.	.54	1972-79	5-31-74	9.36	285	528	6-9	7.54	140	259	5
03373500	East Fork White River at Shoals, Ind.	4,927	1903-06 1909-16 1923-79	3-28-13	42.2	160,000	32.5	8-5	20.46	31,900	6.47	<2
03373680	French Lick Creek tributary near French Lick, Ind.	.29	1973-79	3-28-77	8.00	170	586	7-27	-----	215	741	35
03373700	Lost River near West Baden Springs, Ind.	287	1965-79	7-22-73 3- -64	25.35 28.1	7,020	24.5	7-27	25.71	7,540	26.3	24
03373850	Slate Creek tributary near Haysville, Ind.	.14	1973-79	4-24-75	7.29	112	800	6-9	6.65	80	571	<2
03374000	White River at Petersburg, Ind.	11,125	1928-79	1-22-37 3- -13	28.3 29.5	183,000 235,000	16.4 21.1	8-5	24.12	84,000	7.55	3
03374955	Patoka River near Hardinsburg, Ind.	12.8	1969-79	5-31-76	8.22	1,960	153	7-26	11.35	9,270	724	>100
03375500	Patoka River at Jasper, Ind.	262	1948-79	3-11-64 3- -13	1/15.17 1/15.9	14,100 16,000	53.8 61.1	6-10	16.35	2/3,360	13.8	<2
03375800	Hall Creek near St. Anthony, Ind.	21.8	1971-79	4-24-75 2-23-75	12.35 12.38	4,400	202	7-26	15.30	11,500	528	>100
03376230	Shiloh Drain near Jasper, Ind.	.57	1973-79	1-20-74	9.31	220	386	6-10	10.85	350	614	>100

Table 1.--Summary of flood stages and discharges for June-August 1979--Continued

Station no.	Stream and place of determination / Station name	Drainage area (mi²)	Period of record	Maximum flood previously known				Maximum peaks June - August 1979				Recurrence interval (yr)
				Date	Gage height (ft)	Discharge (ft³/s)	Discharge [(ft³/s)/mi²]	Date	Gage height (ft)	Discharge (ft³/s)	Discharge [(ft³/s)/mi²]	
03376260	Flat Creek near Otwell, Ind.	21.3	1965-79	5-12-78 3- -64	12.34 12.58	1,680	78.9	7-26	12.31	1,100	51.6	<2
033762785	Rock Creek near Velpen, Ind.	4.54	-------	-------	--------	-------	-----	6-9	-----	1/2,500	551	>100
03376340	Patoka River tributary near Glezen, Ind.	.84	1973-79	3-27-77	7.81	164	195	7-27	10.71	350	417	>100
03376350	South Fork Patoka River near Spurgeon, Ind.	42.8	1965-79	4-28-70 3-64	12.79 13.09	3,600 4,000	84.1 93.5	6-9	15.07	5,900	138	>100
03376500	Patoka River near Princeton, Ind.	822	1934-79	1-26-37	10/26.80	18,700	22.7	8-2	19.57	10,500	12.8	7
03377500	Wabash River at Mount Carmel, Ind.	28,635	1928-79	5-23-43 2-5, 6,69 3-30-13	 30.62 33.0	305,000 428,000	10.7 14.9	8-7	27.24	140,000	4.89	3
03378550	Big Creek near Wadesville, Ind.	104	1965-79	4-24-75	19.72	7,610	73.2	7-26	17.26	1,820	17.5	<2
03378590	Olive Creek tributary near Solitude, Ind.	.32	1973-79	5-31-74	9.89	222	694	7-26	8.06	98	306	<2

1/ Regulated by Brookville Lake since January 1974.
2/ Part of drainage area does not contribute directly to surface runoff.
3/ Indirect measurement.
4/ Flow regulated by Forest Service and Soil Conservation Service control structure.
5/ Recurrent interval based on period of regulation.
6/ Includes 5.57 mi² from Dry Run basin.
7/ At site 0.4 mi downstream.
8/ Regulated by Patoka Lake since February 1978.
9/ At Jasper, 5.6 mi downstream. March 11, 1964, reached a stage of 21.20 ft at gage.
10/ At site "at Patoka", 4.1 mi downstream.

Table 2.--Monthly discharges at selected sites, June through August 1979

[Data collected by the U.S. Geological Survey]

Station no.	Station name	Period of record	Drainage area (mi^2)	Monthly discharges (ft^3/s)					
				June 1979[1]	June period of record[2]	July 1979[1]	July period of record[2]	August 1979[1]	August period of record[2]
03274650	Whitewater River near Economy, Ind.	1971-79	10.4	9.82	8.01	27.5	5.86	61.5	9.45
03342100	Busseron Creek near Hymera, Ind.	1967-79	16.7	1.28	8.50	60	11.7	25.4	5.16
03342500	Busseron Creek near Carlisle, Ind.	1944-79	228	163	186	1,101	105	633	55.4
03353800	White Lick Creek at Mooresville, Ind.	1958-79	212	90.6	163	764	164	567	94.4
03372300	Stephens Creek near Bloomington, Ind.	1971-79	10.9	3.62	5.72	48.6	7.07	13.3	1.67
03374455	Patoka River near Hardinsburg, Ind.	1969-79	12.8	47.5	17.6	89.6	15.6	15.4	7.26
03375800	Hall Creek near St. Anthony, Ind.	1971-79	21.8	71.8	18.8	246	33.2	52.5	20.2
03376350	South Fork Patoka River near Spurgeon, Ind.	1965-79	42.8	227	45.7	240	38.7	127	18.4

[1]Monthly mean.
[2]Mean monthly.

Table 3.--Reservoir volumes for selected sites, June through August 1979

Station no.	Station name	Date	Time[1]	Elevation (feet above NGVD)	Volume in storage (acre-ft)
03374498	Patoka Lake near Cuzco, Ind.	6-30	12:00 p.m.	539.00	205,800
		7-31	12:00 p.m.	545.57	270,970
		8- 3	10:00 a.m.	545.97	[2]275,170
		8-31	12:00 p.m.	545.35	268,650
03358900	Cagles Mill Lake near Manhattan, Ind.	6-30	12:00 p.m.	639.75	32,660
		7-31	12:00 p.m.	680.82	132,900
		8-30	2:00 p.m.	689.61	[2]165,210
		8-31	12:00 p.m.	689.10	163,210
03372400	Monroe Lake near Harrodsburg, Ind.	6-30	12:00 p.m.	537.99	182,140
		7-31	12:00 p.m.	545.41	272,340
		8- 7	1:00 a.m.	547.00	[2]294,520
		8-11	9:00 a.m.	547.00	[2]294,520
		8-31	12:00 p.m.	545.16	268,680
03275990	Brookville Lake at Brookville, Ind.	6-30	12:00 p.m.	748.32	185,710
		7-31	12:00 p.m.	753.97	217,060
		8- 3	2:00 a.m.	754.16	[2]218,170
		8-31	12:00 p.m.	748.32	185,710

[1]Eastern standard time.
[2]Maximum for June-August 1979.

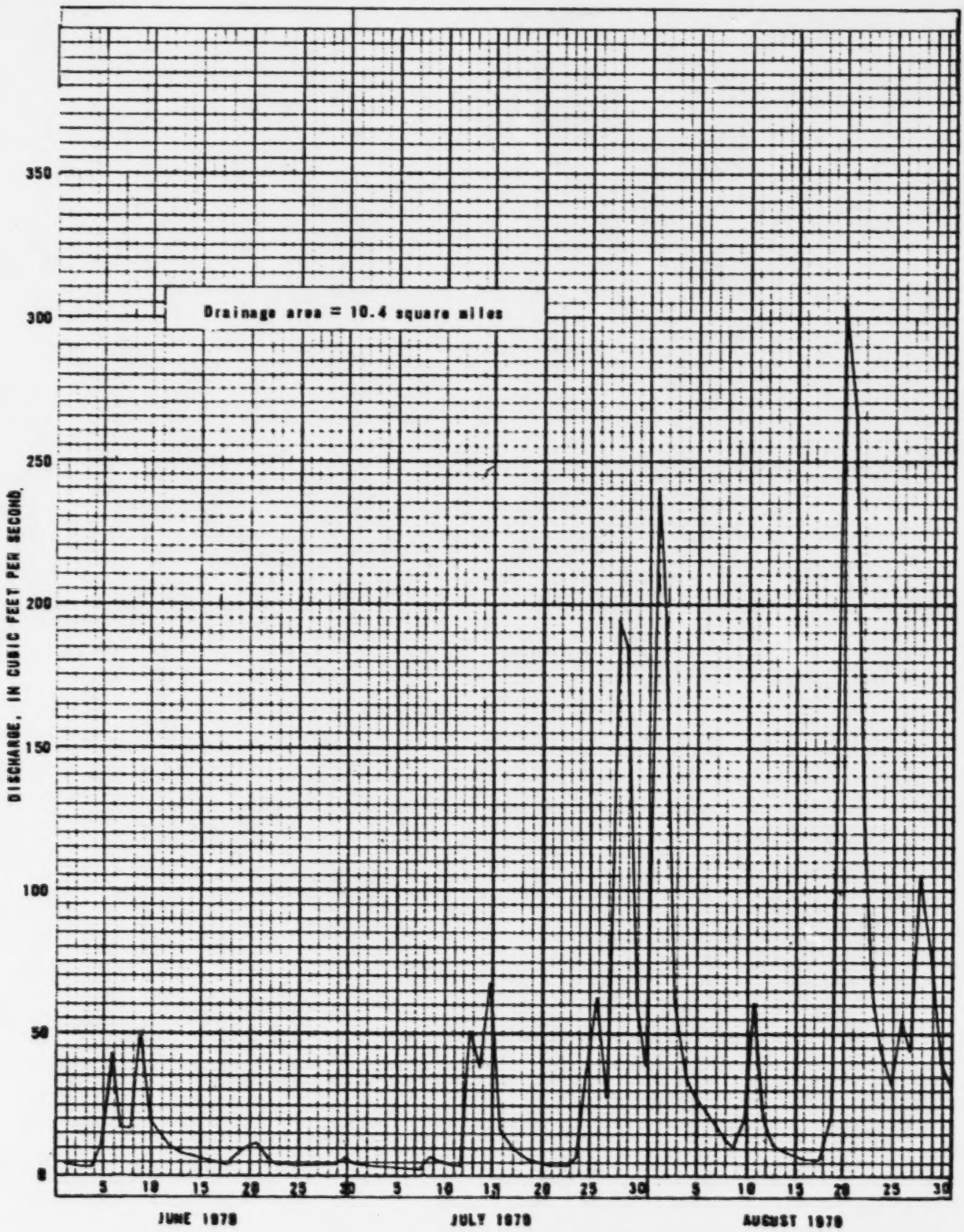


Figure 13.--Discharge hydrograph of Whitewater River near Economy, Ind. (03274650).

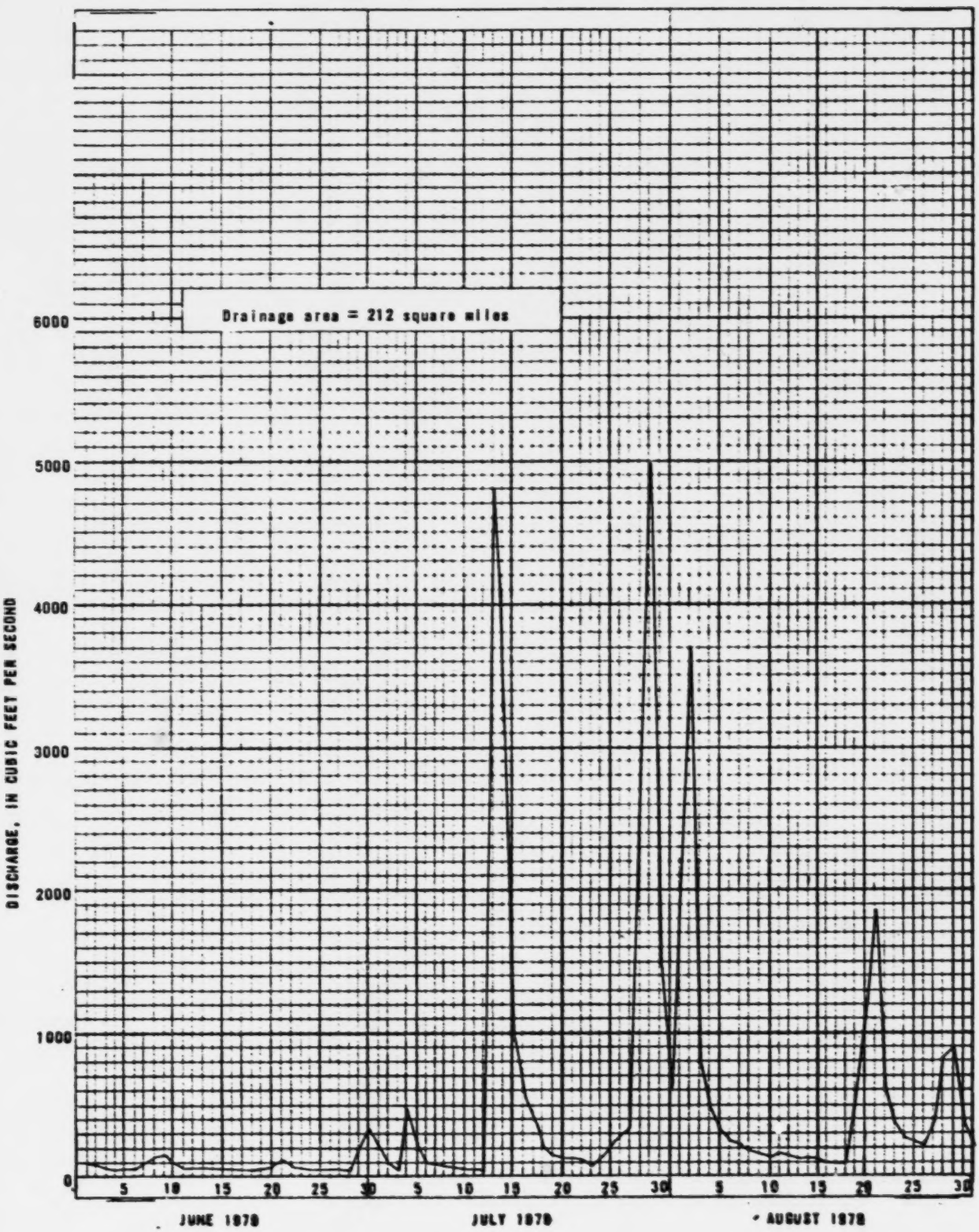


Figure 14.-- Discharge hydrograph of White Lick Creek at Mooresville, Ind. (03353800).

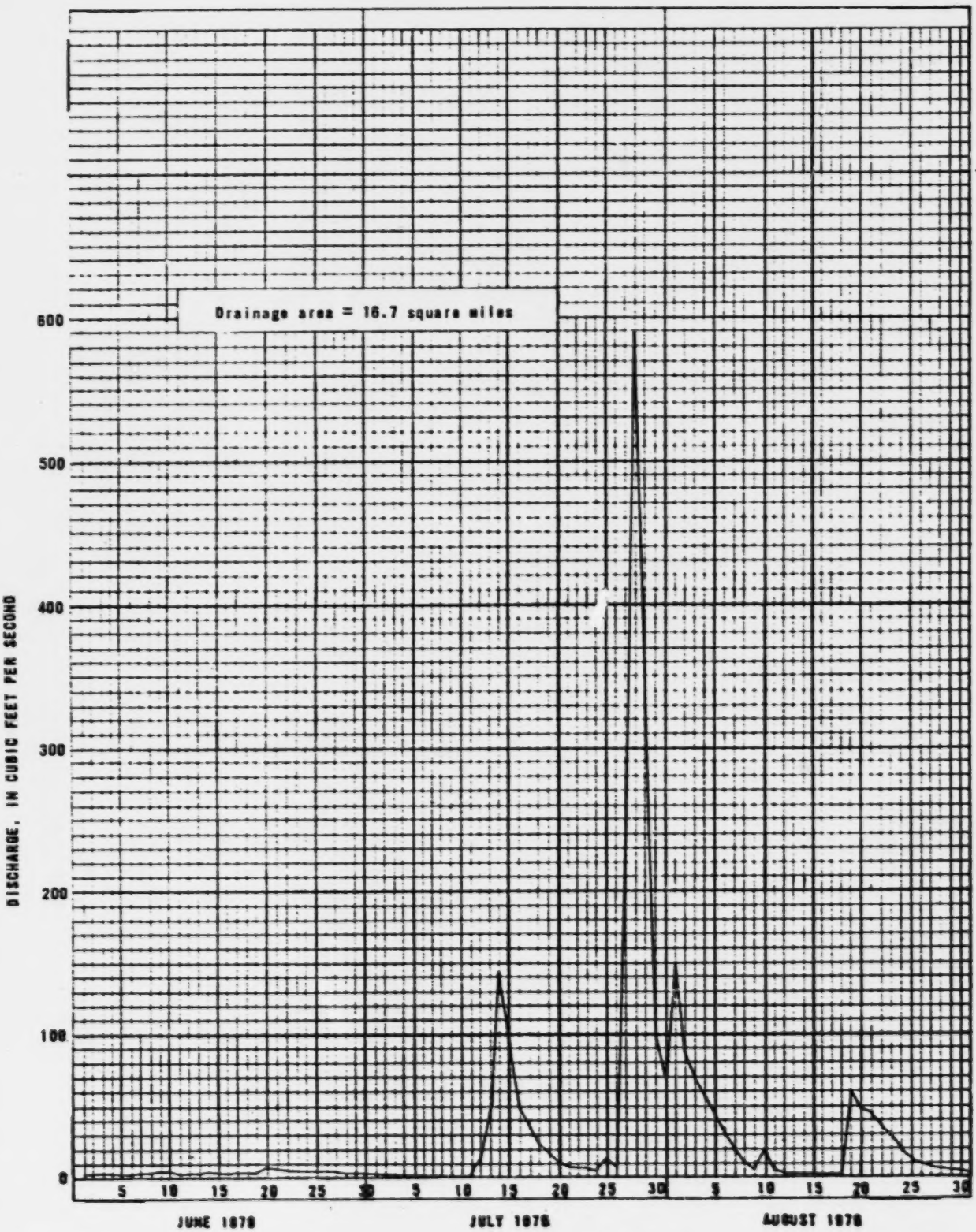


Figure 15.— Discharge hydrograph of Busseron Creek near Hymera, Ind. (03342100).

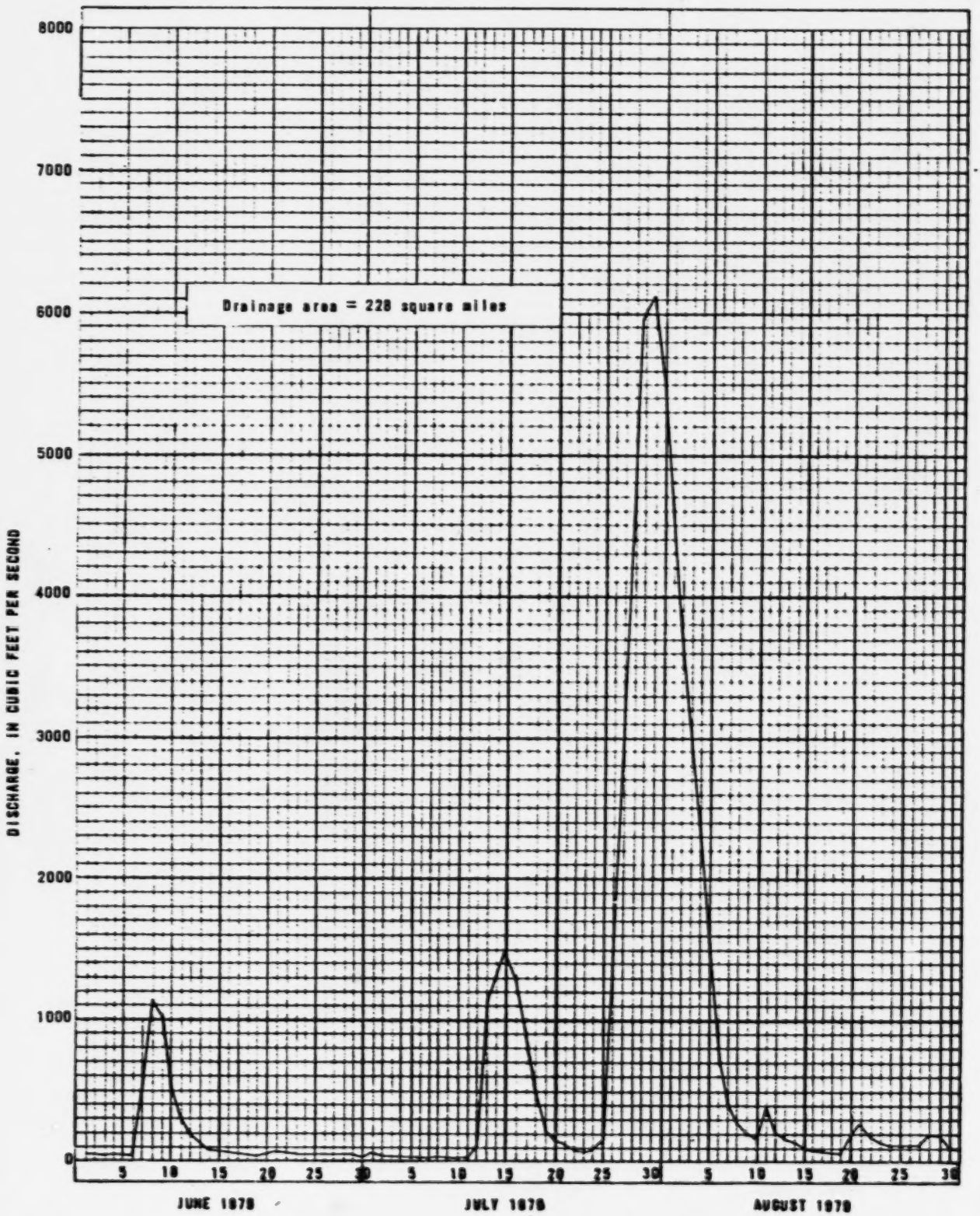


Figure 16.-- Discharge hydrograph of Busseron Creek near Carlisle, Ind. (03342500).

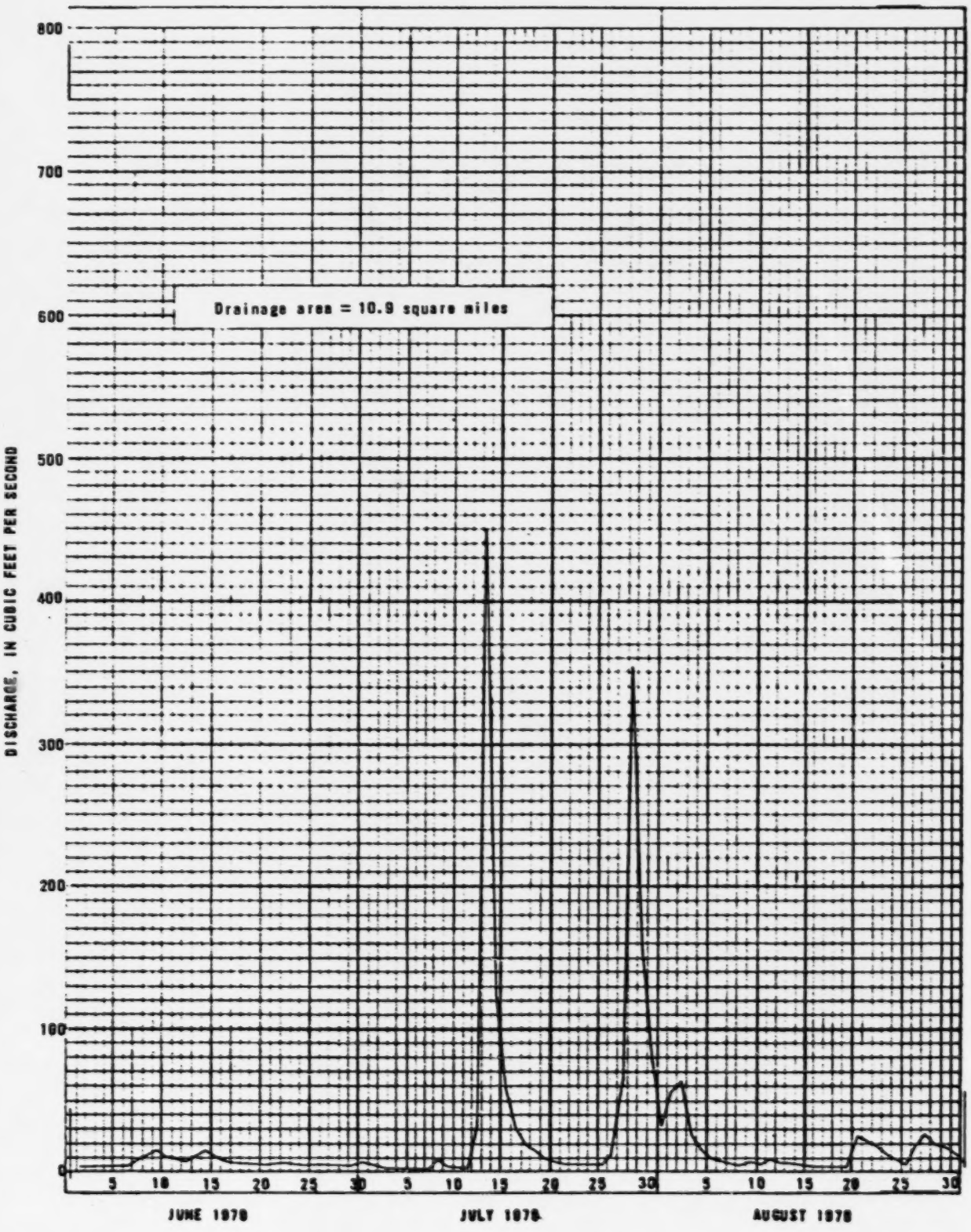


Figure 17.-- Discharge hydrograph of Stephens Creek near Bloomington, Ind. (03372300).

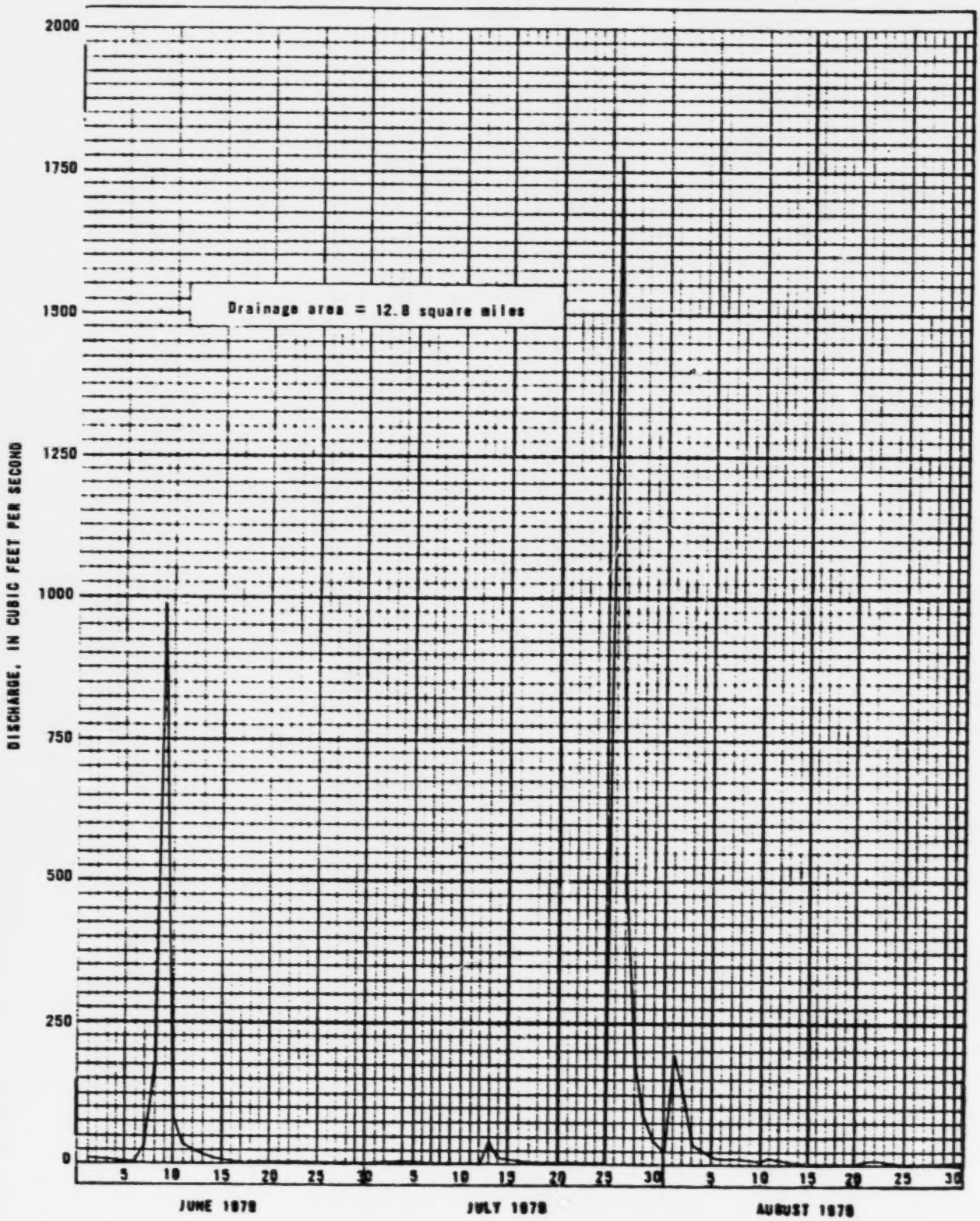


Figure 18.-- Discharge hydrograph of Petoka River near Hardinsburg, Ind. (03374455).

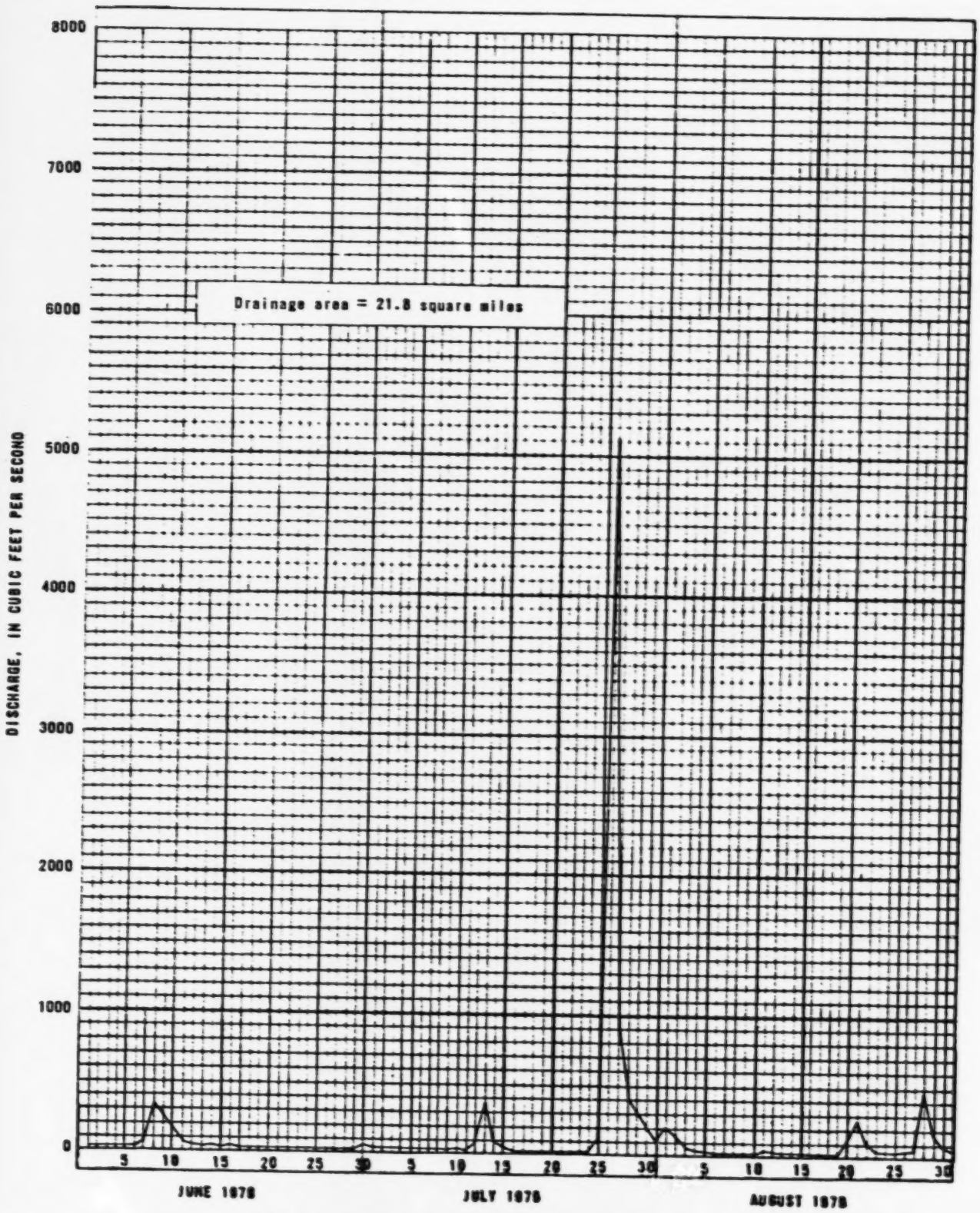


Figure 19.— Discharge hydrograph of Nail Creek near St. Anthony, Ind. (03375800).

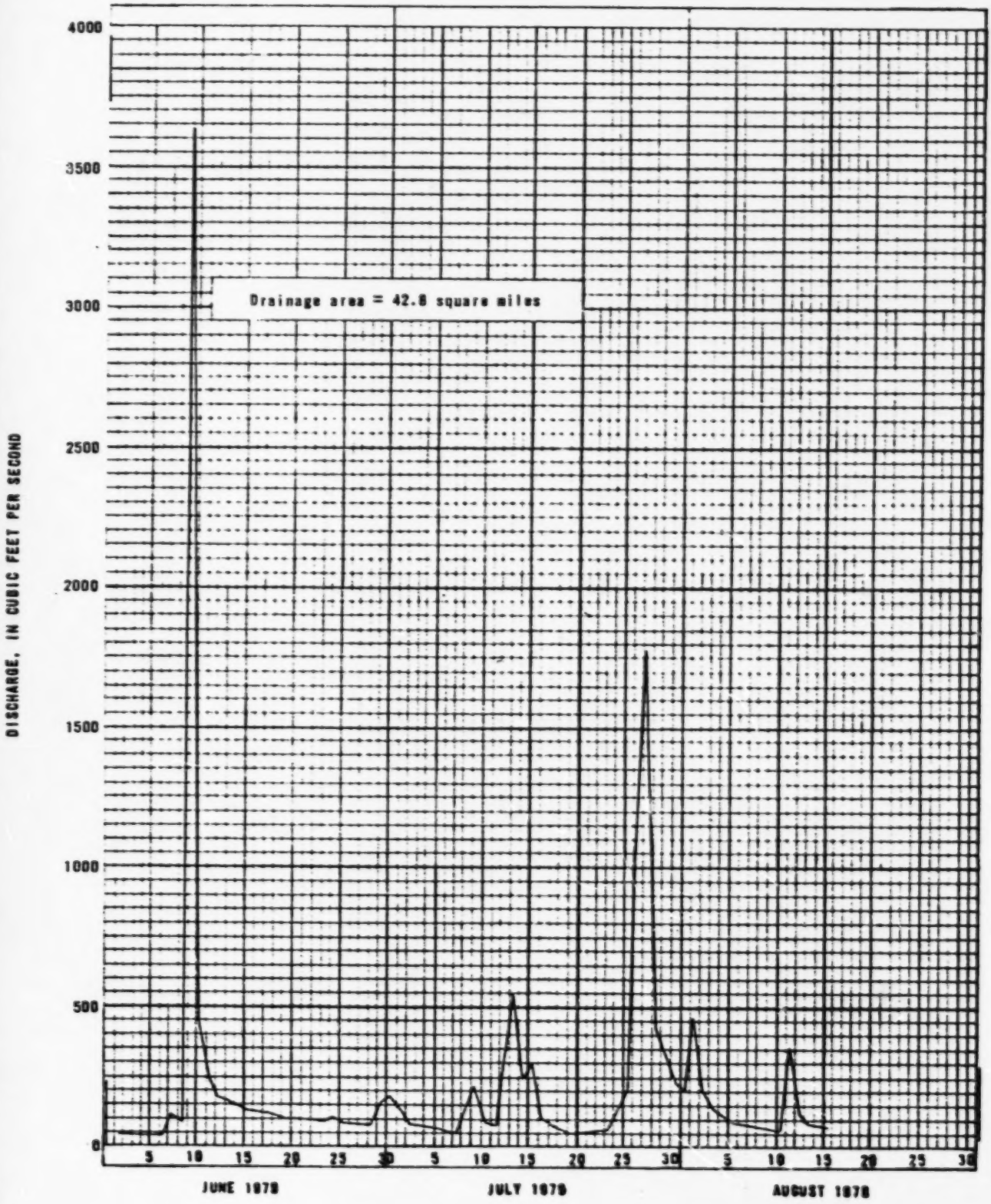


Figure 20.-- Discharge hydrograph of South Fork Patoka River near Spurgeon, Ind. (03376350).

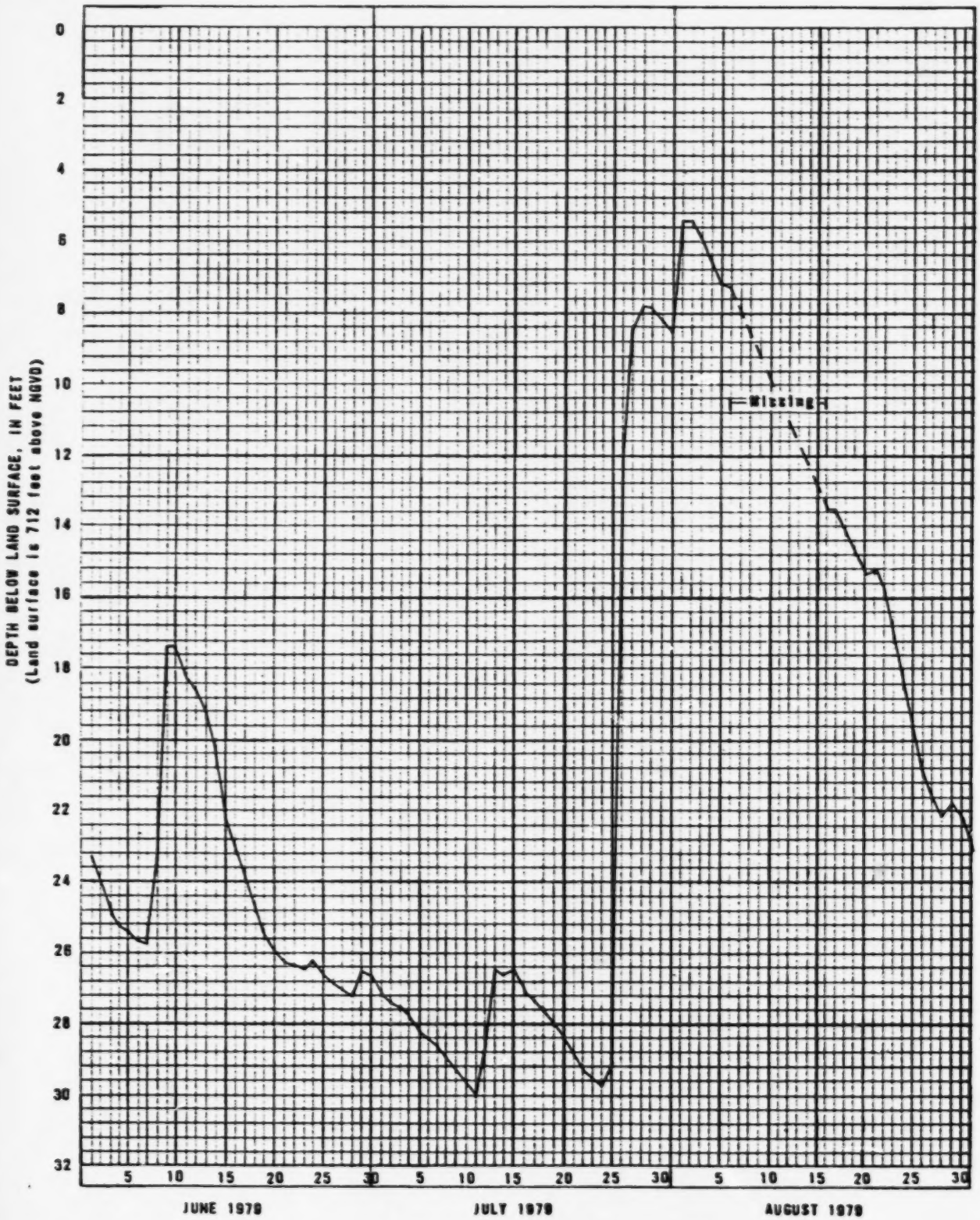


Figure 21.-- Water levels at observation well Orange 2.

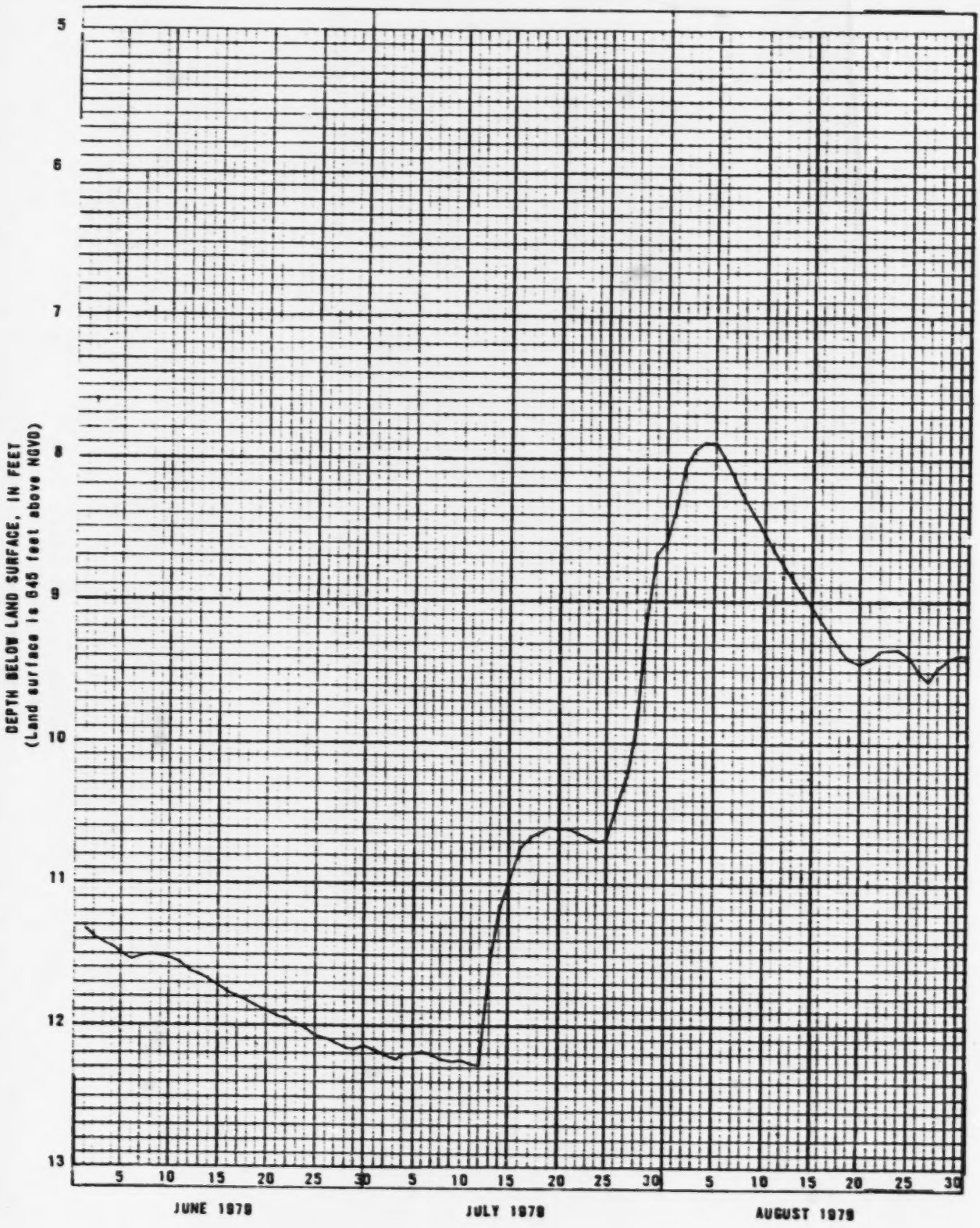


Figure 22.-- Water levels at observation well Morgan 4.

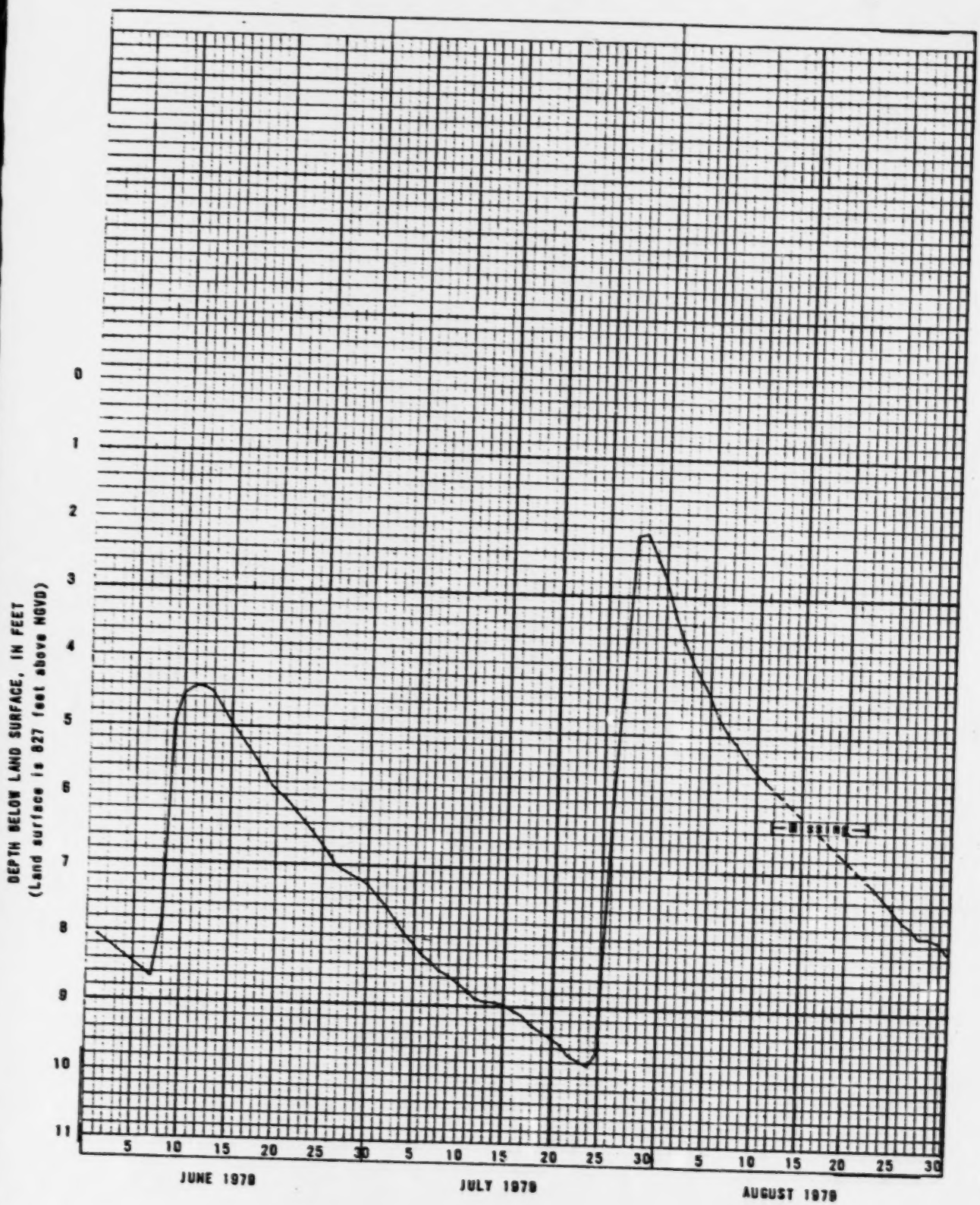


Figure 23.-- Water levels at observation well Harrison 8.

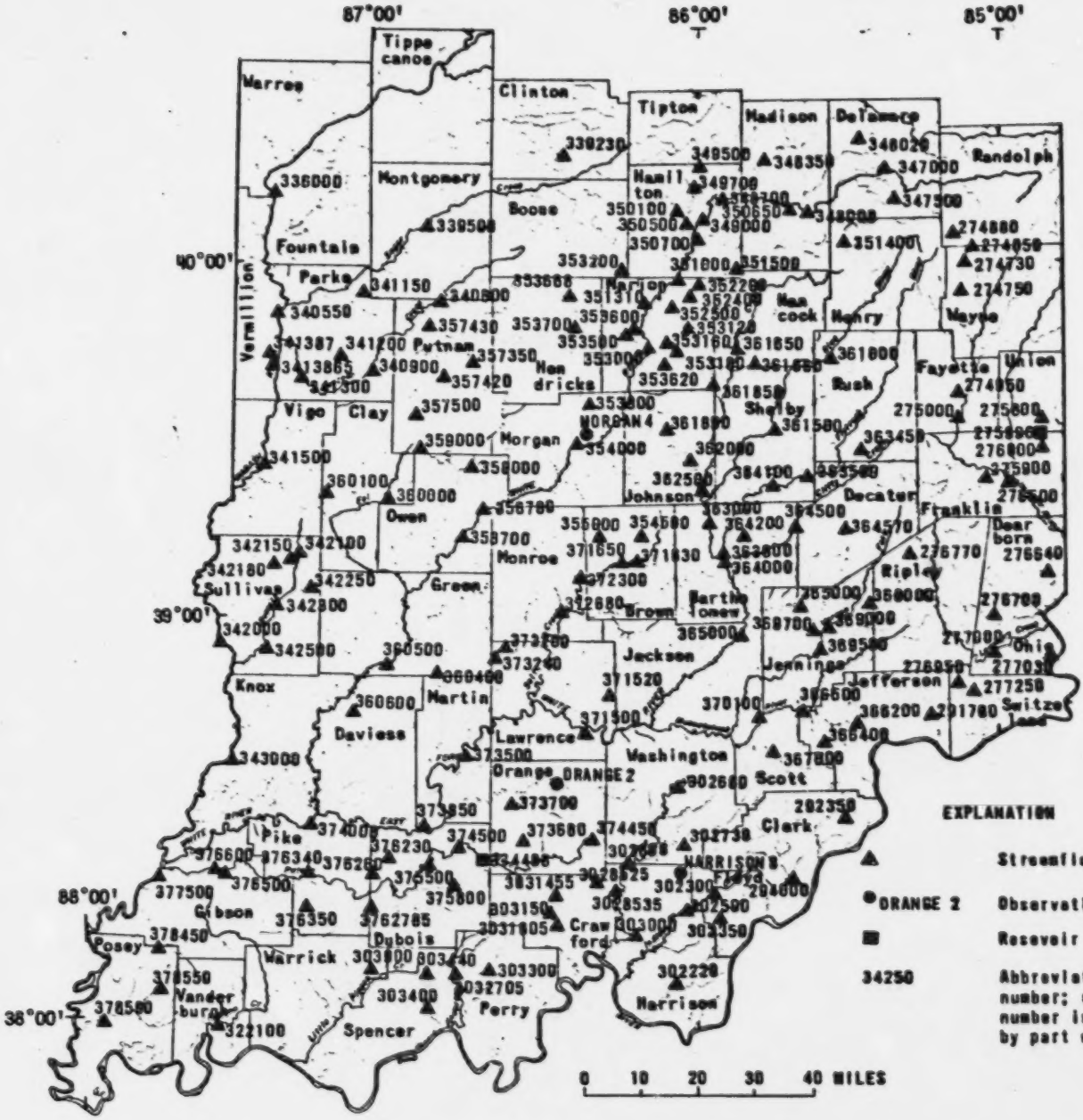


Figure 24.-- Streamflow stations, reservoirs, and observation wells.

SUMMARY OF THE HYDROLOGIC DATA

The floods of the summer of 1979 were diverse in areal extent, and some were extreme in magnitude. In general, the peaks during the June floods were not the maximum at the measuring sites during the summer period. This explains why table 1 does not list many June peaks. Although the discharge hydrograph for the Patoka River near Hardinsburg (fig. 18) shows a significant peak on June 9, that peak was exceeded by the subsequent peak on July 26. The significant factor of the June flooding is the saturated condition of the soil after the water receded. This condition and further rainfall between early June and July set the stage for the extreme flooding in July.

The widespread nature of the July flooding is shown in the tables and graphs. Discharge hydrographs for all stations reflect either one or two significant peaks during the month. Peaks were equal to or greater than the 100-yr recurrence interval at 16 sites in diverse parts of the State (table 1). In addition, peaks of lesser but significant recurrence intervals were recorded at other sites. Indicative of the degree of the flooding in the area of the Little Blue River at Grantsburg was one resident's observation that the flooding there was the greatest he had seen in his 65 years.

REFERENCES

National Oceanic and Atmospheric Administration, 1979, Climatological data for Indiana, June 1979: Asheville, N. C., National Oceanic and Atmospheric Administration, Environmental Data and Information Service, v. 84, no. 6.

_____ 1979, Climatological data for Indiana, July 1979: Asheville, N.C., National Oceanic and Atmospheric Administration, Environmental Data and Information Services, v. 84, no. 7.

U.S. Department of Commerce, 1974, Climates of the States: Port Washington, N.Y., Water Information Center, v. 1, Eastern States plus Puerto Rico and the U.S. Virgin Islands, 480 p.

U.S. Geological Survey, 1980, Water Resources for Indiana, Water year 1979: U.S. Geological Survey Water-Data Report IN-79-1, 419 p.

U.S. Water Resources Council, 1977, Guidelines for determining flood flow frequency: U.S. Water Resources Council, Bulletin 17A, 26 p. and 14 appendices.

Table 4.--Locations of streamflow stations used in this report

Station number	Name	Location
03274650	Whitewater River near Economy, Ind.	Lat 40°00'05", long 85°06'56", in NW¼ sec. 19, T. 18 N., R. 13 E., Wayne County, on right bank 6 ft downstream from bridge on County Line Road, 1.7 mi upstream from Little Creek, 2.4 mi northwest of Economy.
03274730	Whitewater River tributary near Hagerstown, Ind.	Lat 39°54'38", long 85°05'56", in NE¼SE¼NE¼ sec. 23, T. 17 N., R. 12 E., Wayne County, at culvert on State Highway 38, 0.7 mi east of Hagerstown.
03274750	Whitewater River near Hagerstown, Ind.	Lat 39°52'25", long 85°09'47", in NE¼NE¼ sec. 3, T. 16 N., R. 12 E., Wayne County, on left bank at downstream side of bridge on Terry Meyers Road, 1.0 mi upstream from Pronghorn Run, 1.5 mi north of Interstate 70, 2.0 mi downstream from Nettle Creek, 2.6 mi south of Hagerstown.
03274880	Greens Fork tributary near Lynn, Ind.	Lat 40°01'14", long 84°56'24", in SW¼SW¼SW¼ sec. 11, T. 18 N., R. 14 E., Randolph County, at culvert on U.S. Highway 27, 1.9 mi south of intersection of U.S. Highways 27 and 36 in Lynn.
03274950	Little Williams Creek at Connersville, Ind.	Lat 39°38'16", long 85°10'20", in SW¼NE¼ sec. 27, T. 14 N., R. 12 E., Fayette County, on downstream left bank wingwall of bridge on State Highway 44, 1 mi west of Connersville, and 2.6 mi upstream from mouth.
03275000	Whitewater River near Alpine, Ind.	Lat 39°34'23", long 85°09'27", in SW¼SE¼ sec. 14, T. 13 N., R. 12 E., Fayette County.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03275800	West Run near Liberty, Ind.	Lat 39°38'24", long 84°57'18", in SE¼SE¼SW¼ sec. 2, T. 14 N., R. 2 W., Union County, at culvert on State Highway 44, 4.8 mi east of Fayette-Union County line, 1.1 mi west of Liberty.
03275900	Templeton Creek near Fairfield, Ind.	Lat 39°31'20", long 84°56'51", in SW¼NW¼NW¼ sec. 24, T. 10 N., R. 2 W., Franklin County, at culvert on State Highway 101, 0.25 mi south of Franklin-Union County Line.
03276000	East Fork Whitewater River at Brookville, Ind.	Lat 39°26'02", long 85°00'12", in NE¼NE¼ sec. 20, T. 9 N., R. 2 W., Franklin County.
03276500	Whitewater River at Brookville, Ind.	Lat 39°24'24", long 85°00'46", in NE¼NW¼ sec. 32, T. 9 W., R. 2 W., Franklin County.
03276640	Tanners Creek tributary near Lawrenceburg, Ind.	Lat 39°09'18", long 84°52'20", in NW¼SW¼NE¼ sec. 27, T. 6 N., R. 1 W., Dearborn County, at culvert 0.25 mi east of Salt Fork Road on State Highway 1.
03276700	South Hogan Creek near Dillsboro, Ind.	Lat 39°01'47", long 85°02'17", in SW¼NW¼ sec. 7, T. 4 N., R. 2 W., Dearborn County.
03276770	Laughery Creek tributary near Napoleon, Ind.	Lat 39°13'18", long 85°20'07", in SE¼SE¼SE¼ sec. 18, T. 9 N., R. 11 E., Ripley County, at culvert on U.S. Highway 421, 1.1 mi north of Napoleon.
03276950	Uhlman Creek tributary near Avonburg, Ind.	Lat 38° 53'33", long 85°11'04", in NW¼NW¼SW¼ sec. 10, T. 4 N., R. 12 E., Switzerland County, at culvert on State Highway 129, 1.5 mi north of State Highway 250 at Pleasant.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03277000	Laughery Creek near Farmers Retreat, Ind.	Lat 38°57'08", long 85°04'15", in NW¼SE¼ sec. 2, T. 4 N., R. 3 W., Ohio County.
03277030	Ohio River tributary near Rising Sun, Ind.	Lat 38°59'36", long 84°51'16", in SW¼NW¼SW¼ sec. 23, T. 4 N., R. 1 W., Ohio County, at culvert on State Highway 56, 3.3 mi north of State Highway 262 in Rising Sun.
03277250	Indian Creek tributary near Bennington, Ind.	Lat 38°52'25", long 85°07'24", in NE¼NW¼NE¼ sec. 5, T. 4 N., R. 3 W., Switzerland County, at culvert on State Highway 250, 3.7 mi east of State Highway 129 at Pleasant.
03291780	Indian-Kentuck Creek near Canaan, Ind.	Lat 38°52'41", long 85°15'26", in SW¼NW¼ sec. 13, T. 15 N., R. 11 E., Jefferson County, on downstream end of left pier of bridge on State Highway 62, 1,500 ft upstream from Wilson Fork, 2.0 mi northeast of Canaan.
03292350	Flag Run tributary near New Washington, Ind.	Lat 38°31'08", long 85°32'29", in NW¼NW¼NE¼ sec. 20, T. 1 N., R. 9 E., Clark County, at culvert on State Highway 62, 3.0 mi south of New Washington.
03294000	Silver Creek near Sellersburg, Ind.	Lat 38°22'15", long 85°43'35", in SW¼SW¼ lot 68, Clark Military Grant, Clark County.
03302220	Buck Creek near New Middleton, Ind.	Lat 38°07'13", long 86°05'16", in SE¼NE¼ sec. 32, T. 4 S., R. 4 E., Harrison County, at downstream end of pier of bridge on State Highway 337, 0.6 mi downstream from South Fork Buck Creek, 3.6 mi southwest of New Middleton, and 14.4 mi upstream from mouth.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03302300	Little Indian Creek near Galena, Ind.	Lat 38°19'19", long 85°55'53", in NE¼SW¼ sec. 23, T. 2 S., R. 5 E., Floyd County, on right bank at downstream side of county road bridge, 2 mi south of Galena, 3.6 mi upstream from mouth, 7.0 mi northwest of New Albany.
03302350	Georgetown Creek tributary near Georgetown, Ind.	Lat 38°17'30", long 85°56'26", in SW¼NW¼SW¼ sec. 35, T. 25 N., R. 5 E., Floyd County, at culvert on State Highway 64, 1.8 mi east of Georgetown, Ind.
03302500	Indian Creek near Corydon, Ind.	Lat 38°16'35", long 86°06'35", in SW¼SE¼ sec. 6, T. 3 S., R. 4 E., Harrison County.
03302680	West Fork Blue River at Salem, Ind.	Lat 38°36'19", long 86°05'40", in SW¼SE¼ sec. 17, T. 2 N., R. 4 E., Washington County, on left bank at downstream side of bridge on East Market Street, 0.35 mi east of County Court House in Salem, 6.0 mi upstream from Hoggatt Branch, 6.9 mi upstream from mouth.
03302730	South Fork Blue River near Palmyra, Ind.	Lat 38°28'07", long 86°04'55", in NE¼NW¼ sec. 4, T. 15 N., R. 4 E., Washington County, on Old Palmyra Road, and 4.7 mi north of Palmyra.
03302800	Blue River at Fredricksburg, Ind.	Lat 38°26'02", long 86°11'31", in NE¼NW¼ sec. 16, T. 1 S., R. 3 E., Washington County, at bridge on U.S. Highway 150 at Fredericksburg, and at mile 57.1.
033028525	Brandywine Fork near Marengo, Ind.	Lat 38°21'48", long 86°21'03", in NE¼NE¼ sec. 12, T. 2 S., R. 1 E., Crawford County, at State Highway 66, 0.5 mi west of Marengo, and 0.9 mi above mouth.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
033028535	Whiskey Run at Milltown, Ind.	Lat 38°21'01", long 86°17'55", in NW¼NE¼ sec. 16, T. 2 S., R. 2 E., Crawford County, at Southern Railroad bridge, 1.4 mi northwest of Milltown and 1.4 mi upstream from mouth.
03303300	Middle Fork Anderson River at Bristow, Ind.	Lat 38°08'19", long 86°43'16", in SW¼NE¼ sec. 27, T. 4 S., R. 3 W., Perry County.
03303400	Crooked Creek at Santa Claus, Ind.	Lat 38°07'05", long 86°53'24", in SW¼SE¼ sec. 31, T. 4 S., R. 4 W., Spencer County, on right bank at upstream side of bridge on county road, 1.3 mi east of Santa Claus Post Office, 1.8 mi upstream from unnamed right bank tributary.
03303440	East Fork Crooked Creek tributary near Fulda, Ind.	Lat 38°05'18", long 86°49'12", in NW¼NW¼NE¼ sec. 14, T. 5 S., R. 4 W., Spencer County, at culvert on State Highway 545, 1.6 mi south of Fulda.
03303000	Blue River near White Cloud, Ind.	Lat 38°14'15", long 86°13'42", in NW¼SE¼ sec. 19, T. 3 S., R. 3 E., Harrison County.
033031455	Bird Hollow Creek above Dog Creek near English, Ind.	Lat 38°21'30", long 86°28'00", in sec. 12, T. 2 S., R. 1 W., Crawford County, 75 ft east of State Highway 37, 0.5 mi above Dog Creek, and 1.6 mi north of English.
03303150	Bird Hollow Creek at English, Ind.	Lat 38°21'02", long 86°28'01", in SE¼NE¼NW¼ sec. 13, T. 2 S., R. 1 W., Crawford County, at bridge on State Highway 37, 0.7 mi north of State Highway 64.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
033031605	Little Blue River at English, Ind.	Lat 38°19'42", long 86°28'31", in SW¼ sec. 24, T. 2 S., R. 1 W., Crawford County, at Southern Railroad bridge, 0.8 mi southwest of English, and 1.2 mi below Bird Hollow Creek.
033032705	Anderson River near Saint Meinrad, Ind.	Lat 38°04'31", long 86°46'42", in SE¼ sec. 18, T. 5 S., R. 3 W., at county road bridge on Spencer-Perry County line, 2 mi south of Hoffman, and 6.5 mi south of Saint Meinrad.
03303900	Little Red Creek tributary near Heilman, Ind.	Lat 38°11'35", long 87°05'22", in NE¼SE¼SE¼ sec. 5, T. 4 S., R. 6 W., Warrick County, at culvert on State Highway 161, 2.4 mi north of Heilman.
03322100	Pigeon Creek at Evansville, Ind.	Lat 38°00'14", long 87°32'19", in NE¼NW¼ sec. 16, T. 6 S., R. 10 W., Vanderburgh County.
03339230	Woods ditch near Frankfort, Ind.	Lat 40°13'13", long 86°27'34", in NE¼NE¼SW¼ sec. 31, T. 21 N., R. 1 E., Clinton County, at culvert on State Highway 38, 2.2 mi southeast of State Highway 39.
03339500	Sugar Creek at Crawfordsville, Ind.	Lat 40°02'56", long 86°53'58", in SW¼NW¼ sec. 32, T. 19 N., R. 4 W., Montgomery County.
03340500	Wabash River at Montezuma, Ind.	Lat 39°47'33", long 87°22'36", in SE¼NE¼ sec. 35, T. 16 N., R. 9 W., Parke County, at bridge on U.S. Highway 36 at Montezuma, at mile 240.0.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03340800	Big Raccoon Creek near Fincastle, Ind.	Lat 39°48'45", long 86°57'14", in NW¼SW¼ sec. 22, T. 16 N., R. 5 W., Putnam County.
03340900	Big Raccoon Creek at Ferndale, Ind.	Lat 39°41'44", long 87°05'01", in SE¼SW¼ sec. 33, T. 15 N., R. 6 W., Parke County, 1.1 mi southwest of Ferndale, and at mile 31.6.
03341150	Demeree Creek tributary near Byron, Ind.	Lat 39°52'39", long 87°05'56", in NW¼SW¼NE¼ sec. 33, T. 17 N., R. 6 W., Parke County, at culvert on State Highway 47, 0.5 mi west of Montgomery County Line.
03341200	Little Raccoon Creek near Catlin, Ind.	Lat 39°40'38", long 87°13'38", in NE¼NW¼ sec. 7, T. 14 N., R. 7 W., Parke County.
03341300	Big Raccoon Creek at Coxville, Ind.	Lat 39°39'09", long 87°17'37", in SW¼SW¼ sec. 15, T. 14 N., R. 8 W., Parke County, at bridge on county road at Coxville, and at mile 13.1.
033413870	Feather Creek near Clinton, Ind.	Lat 39°41'42", long 87°27'01", in SW¼SE¼ sec. 31, T. 15 N., R. 9 W., Vermillion County, at culvert on County Road 1300 South, 2.8 mi northwest of Clinton.
033413865	Feather Creek at Clinton, Ind.	Lat 39°40'35", long 87°25'38", on line between NE¼ sec. 8, and NW¼ sec. 9, T. 14 N., R. 9 W., Vermillion County, at county road bridge, 1 mi northwest of Clinton.
03315000	Wabash River at Terre Haute, Ind.	Lat 39°28'00", long 87°25'08", in NE¼SW¼ sec. 21, T. 12 N., R. 9 W., Vigo County, at Wabash Avenue bridge at Terre Haute, and at mile 214.4.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03342000	Wabash River at Riverton, Ind.	Lat 39°01'13", long 87°34'07", in NE¼SW¼ sec. 30, T. 7 N., R. 10 W., Sullivan County, at Illinois Central Railroad bridge at Riverton, and at mile 162.0.
03342100	Busseron Creek near Hymera, Ind.	Lat 39°12'54", long 87°18'41", in NW¼NW¼ sec. 21, T. 9 N., R. 8 W., Sullivan County, at bridge on County Road 900 North, 1.9 mi northwest of Hymera, and at mile 30.3.
03342150	West Fork Busseron Creek near Hymera, Ind.	Lat 39°11'10", long 87°19'44", in NW¼NW¼ sec. 32, T. 9 N., R. 8 W., Sullivan County, at bridge on State Highway 48, 1.4 mi upstream from mouth, 1.5 mi west of Hymera.
03342180	Kettle Creek tributary near Shelburn, Ind.	Lat 39°10'36", long 87°22'27", in SW¼SE¼SE¼ sec. 26, T. 9 N., R. 9 W., Sullivan County, at culvert on State Highway 48, 1.0 mi east of U.S. Highways 41 and 150.
03342250	Mud Creek near Dugger, Ind.	Lat 39°06'23", long 87°16'42", in SE¼NE¼ sec. 27, T. 8 N., R. 8 W., Sullivan County, at bridge on County Road 700 East, 1.7 mi upstream from mouth, and 2.5 mi northwest of Dugger.
03342300	Busseron Creek near Sullivan, Ind.	Lat 39°04'33", long 87°23'11", in SE¼NW¼ sec. 2, T. 7 N., R. 9 W., Sullivan County, at bridge on State Highway 54, 1.5 mi southwest of Sullivan, and at mile 16.7.
03342500	Busseron Creek near Carlisle, Ind.	Lat 38°58'26", long 87°35'23", in NW¼, survey 17, Vincennes Tract, Sullivan County.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03343000	Wabash River at Vincennes, Ind.	Lat 38°42'26", long 87°31'10", in NW¼SW¼ sec. 10, T. 3 N., R. 10 W., Knox County, at bridge on U.S. Highway 50 at the Indiana-Illinois State Line, and at mile 129.8.
03346650	River Deshee tributary near Frichton, Ind.	Lat 38°40'33", long 87°25'47", in SW¼, survey 29, Vincennes Tract, Palmyra Township, Knox County, at culvet on new U.S. Highways 50 and 150, 0.5 mi southwest of Frichton.
03347000	White River at Muncie, Ind.	Lat 40°12'15", long 85°23'14", in SE¼NW¼ Hackley Reserve, Delaware County, at Walnut Street bridge in Muncie, and at mile 315.8.
03347500	Buck Creek near Muncie, Ind.	Lat 40°08'05", long 85°22'25", in SW¼SE¼ sec. 34, T. 20 N., R. 10 E., Delaware County.
03348000	White River at Anderson, Ind.	Lat 40°06'20", long 85°40'16", in NW¼NW¼ sec. 18, T. 19 N., R. 8 E., Madison County, at Twelfth Street bridge, and at mile 293.3.
03348020	Killbuck Creek near Gaston, Ind.	Lat 40°15'45", long 85°30'53", in SE¼SW¼ sec. 16, T. 21 N., R. 9 E., Delaware County, on right bank 30 ft upstream from bridge on County Road 500 North, 15 ft east of County Road 675 West, 3.6 mi southwest of Gaston.
03348350	Pipe Creek at Frankton, Ind.	Lat 40°13'38", long 85°45'58", in SE¼NE¼ sec. 31, T. 21 N., R. 7 E., Madison County, Hydrologic Unit 05120201, on right bank 20 ft downstream from bridge on County Road 500 West, at northeast edge of Frankton.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03348700	White River tributary near Strawtown, Ind.	Lat 40°06'47", long 85°57'10", in NW¼SE¼NW¼ sec. 10, T. 19 N., R. 5 E., Hamilton County, at culvert on State Highway 37, 0.9 mi south of intersection of State Highway 37 and Strawtown Avenue in Strawtown.
03349000	White River at Noblesville, Ind.	Lat 40°02'50", long 86°01'00", in SE¼SE¼ sec. 36, T. 19 N., R. 4 E., Hamilton County, at Logan Street bridge in Noblesville, and at mile 263.5.
03349500	Cicero Creek near Arcadia, Ind.	Lat 40°10'34", long 85°59'43", in NW¼NW¼ sec. 20, T. 20 N., R. 5 E., Hamilton County.
03349700	Little Cicero Creek near Arcadia, Ind.	Lat 40°10'32", long 86°02'45", in NE¼NW¼ sec. 23, T. 20 N., R. 4 E., Hamilton County.
03350100	Hinkle Creek near Cicero, Ind.	Lat 40°06'05", long 86°05'10", in NW¼NW¼ sec. 16, T. 19 N., R. 4 E., Hamilton County.
03350500	Cicero Creek at Noblesville, Ind.	Lat 40°03'20", long 86°02'30", in NW¼NE¼ sec. 35, T. 19 N., R. 4 E., Hamilton County.
03350650	Stony Creek tributary near Lapel, Ind.	Lat 40°05'18", long 85°49'22", in NE¼NW¼NW¼ sec. 23, T. 19 N., R. 6 E., Madison County, at culvert on State Highway 32, 2.0 mi northeast of State Highways 13 and 32 in Lapel.
03350700	Stony Creek near Noblesville, Ind.	Lat 40°01'44", long 85°59'42", in NE¼NE¼ sec. 7, T. 18 N., R. 5 E., Hamilton County, on left bank at downstream side of county road bridge, 1.4 mi upstream from mouth, 1.4 mi southeast of Noblesville.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03351000	White River near Nora, Ind.	Lat 39°54'35", long 86°06'20", in NW¼NW¼ sec. 20, T. 17 N., R. 4 E., Marion County, at bridge on State Road 100, 2 mi east of Nora, and at mile 247.9.
03351310	Crooked Creek at Indianapolis, Ind.	Lat 39°49'47", long 86°12'22", in NW¼SE¼ sec. 16, T. 16 N., R. 3 E., Marion County, at bridge on 42nd Street in Indianapolis, and at mile 1.6.
03351400	Sugar Creek near Middletown, Ind.	Lat 40°02'27", long 85°31'30", in NW¼SE¼ sec. 5, T. 18 N., R. 9 E., Henry County, on right bank 90 ft upstream from bridge on County Road 750 North, 1 mi southeast of Middletown.
03351500	Fall Creek near Fortville, Ind.	Lat 39°57'15", long 85°52'05", in NW¼NE¼ sec. 5, T. 17 N., R. 6 E., Hamilton County.
03352200	Mud Creek at Indianapolis, Ind.	Lat 39°53'30", long 86°00'57", in SE¼NE¼ sec. 25, T. 17 N., R. 4 E., Marion County.
03352400	Blue Creek near Castleton, Ind.	Lat 39°53'23", long 86°02'46", in NW¼NE¼SE¼ sec. 26, T. 17 N., R. 4 E., Marion County, at culvert on State Highway 100, 0.1 mi south of 75th Street, 1.2 mi south of Castleton.
03352500	Fall Creek at Millersville, Ind.	Lat 39°51'07", long 86°05'15", in NE¼NE¼ sec. 9, T. 16 N., R. 4 E., Marion County, at bridge on Emerson Way at Millersville, and 9.2 mi upstream from mouth.
03353000	White River at Indianapolis, Ind.	Lat 39°45'05", long 86°10'30", in NW¼NW¼ sec. 14, T. 15 N., R. 3 E., Marion County, at Morris Street bridge in Indianapolis, and at mile 230.3.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03353120	Pleasant Run at Arlington Avenue at Indianapolis, Ind.	Lat 39°46'33", long 86°03'50", in SW¼NW¼ sec. 2, T. 15 N., R. 4 E., Marion County, at Arlington Avenue bridge in Indianapolis, and at mile 7.9.
03353160	Pleasant Run at Brookville Road at Indianapolis, Ind.	Lat 39°45'52", long 86°05'43", in NE¼NW¼ sec. 9, T. 15 N., R. 4 E., Marion County at Brookville Road bridge in Indianapolis, and at mile 5.7.
03353180	Bean Creek at Indianapolis, Ind.	Lat 39°43'45", long 86°07'14", in NW¼SW¼ sec. 20, T. 15 N., R. 4 E., Marion County, at Keystone Avenue bridge, and at mile 1.8.
03353200	Eagle Creek at Zionsville, Ind.	Lat 39°56'56", long 86°15'22", in SW¼NW¼ sec. 1, T. 17 N., R. 2 E., Boone County.
03353500	Eagle Creek at Indianapolis, Ind.	Lat 39°46'33", long 86°15'01", in NW¼NW¼ sec. 6, T. 15 N., R. 3 E., Marion County, approximately 600 ft south of intersection of West 10th Street and Lynhurst Drive, and 7.1 mi from mouth.
03353600	Little Eagle Creek at Speedway, Ind.	Lat 39°47'15", long 86°13'41", in NE¼SW¼ sec. 32, T. 16 N., R. 3 E., Marion County, at 16th Street bridge in Speedway, and 2.3 mi upstream from mouth.
03353620	Lick Creek at Indianapolis, Ind.	Lat 39°42'21", long 86°06'13", in NE¼NE¼ sec. 32, T. 15 N., R. 4 E., Marion County, at Sherman Drive bridge in Indianapolis, and at mile 6.2.
03353668	White Lick Creek tributary near Brownsburg, Ind.	Lat 39°53'54", long 86°23'34", in SE¼NE¼SE¼ sec. 22, T. 17 N., R. 1 E., Hendricks County, at culvert on State Highway 267, 4.0 mi north of U.S. Highway 136 in Brownsburg.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03353700	West Fork White Lick Creek at Danville, Ind.	Lat 39°45'36", long 86°30'47", in NW¼NE¼ sec. 10, T. 15 N., R. 1 W., Hendricks County.
03353800	White Lick Creek at Mooresville, Ind.	Lat 39°36'28", long 86°22'56", in NE¼SE¼ sec. 35, T. 14 N., R. 1 E., Morgan County.
03354000	White River near Centerton, Ind.	Lat 39°29'51", long 86°24'02", in NE¼NE¼ sec. 10, T. 12 N., R. 1 E., Morgan County, at bridge on Blue Bluff Road, 1 mi south of Centerton, and at mile 199.3.
03354500	Beanblossom Creek at Beanblossom, Ind.	Lat 39°15'45", long 86°14'55", in SW¼NW¼ sec. 31, T. 10 N., R. 3 E., Brown County.
03355000	Bear Creek near Trevlac, Ind.	Lat 39°16'40", long 86°20'45", in NE¼NE¼ sec. 30, T. 10 N., R. 2 E., Brown County.
03356780[1]	Limestone Creek tributary near Gosport, Ind.	Lat 39°21'12", long 86°40'58", in NE¼NW¼NW¼ sec. 31, T. 11 N., R. 2 W., Owen County, at culvert on State Highway 67, 0.9 mi west of Gosport.
03357000	White River at Spencer, Ind.	Lat 39°16'49", long 86°45'42", in NE¼NE¼ sec. 29, T. 10 N., R. 3 W., in Owen County.
03357350	Plum Creek near Bainbridge, Ind.	Lat 39°45'42", long 86°43'46", in SW¼SE¼ sec. 3, T. 15 N., R. 3 W., Putnam County, on right upstream wingwall of bridge on U.S. Highwy 36, 0.5 mi west of Groveland, 4.5 mi east of Bainbridge.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03357420	Big Walnut Creek at Greencastle, Ind.	Lat 39°40'01", long 86°51'57", in NW¼SW¼ sec. 9, T. 14 N., R. 4 W., Putnam County, and at mile 21.1.
03357430	Owl Creek tributary near Bainbridge, Ind.	Lat 39°45'46", long 86°52'53", in SW¼SE¼SW¼ sec. 5, T. 15 N., R. 4 W., Putnam County, at culvert on U.S. Highway 36, 3.7 mi west of Bainbridge.
03357500	Big Walnut Creek near Reelsville, Ind.	Lat 39°32'11", long 86°58'35", in NW¼SW¼ sec. 28, T. 13 N., R. 5 W., Putnam County.
03358000	Mill Creek near Cataract, Ind.	Lat 39°26'00", long 86°45'48", in NE¼SE¼ sec. 32, T. 12 N., R. 3 W., Owen County.
03359000	Mill Creek at Manhattan, Ind.	Lat 39°29'22", long 86°55'50", in SW¼SE¼ sec. 11, T. 12 N., R. 5 W., Putnam County, at mile 2.0.
03360000	Eel River at Bowling Green, Ind.	Lat 39°22'58", long 87°01'14", in NE¼NE¼ sec. 24, T. 11 N., R. 6 W., Clay County, at bridge on State Highway 46 at Bowling Green, and at mile 38.4.
03360100	Clear Branch at Cory, Ind.	Lat 39°23'20", long 87°11'58", in SE¼SW¼SW¼ sec. 16, T. 11 N., R. 7 W., Clay County, at culvert on State Highway 46, 4.9 mi west of State Highway 59.
03360400	Doans Creek tributary near Doans, Ind.	Lat 38°55'12", long 86°50'54", in SW¼SW¼SW¼ sec. 27, T. 6 N., R. 4 W., Greene County, at culvert on State Highway 58 at Doans.
03360500	White River at Newberry, Ind.	Lat 38°55'42", long 87°01'00", in NE¼NE¼ sec. 25, T. 6 N., R. 6 W., Greene County, at bridge on State Highway 57 at Newberry, and at mile 112.7.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03360600	Smothers Creek near Plainville, Ind.	Lat 38°48'43", long 87°07'48", in SE¼NE¼ sec. 1, T. 4 N., R. 7 W., Daviess County, at county road bridge, 1.3 mi northeast of State Highway 57 in Plainville.
03360750	Miller ditch tributary near Bicknell, Ind.	Lat 38°47'08", long 87°18'36", in SE¼NW¼NW¼ sec. 16, T. 4 N., R. 8 W., Knox County, at culvert on State Highway 159, 0.4 mi north of State Highway 67 in Bicknell.
03361000	Big Blue River at Carthage, Ind.	Lat 39°44'38", long 85°34'33", in SW¼SW¼ sec. 18, T. 15 N., R. 9 E., Rush County.
03361500	Big Blue River at Shelbyville, Ind.	Lat 39°31'45", long 85°46'55", in SE¼SE¼ sec. 31, T. 13 N., R. 7 E., Shelby County.
03361650	Sugar Creek at New Palestine, Ind.	Lat 39°42'51", long 85°53'08", in SE¼SW¼ sec. 29, T. 15 N., R. 6 E., Hancock County, 0.5 mi south of New Palestine, 3.1 mi upstream from Little Sugar Creek, 37.3 mi upstream from mouth.
03361600	Little Sugar Creek tributary at Carrollton, Ind.	Lat 39°42'22", long 85°49'40", in SW¼SW¼NE¼ sec. 35, T. 15 N., R. 6 E., Hancock County, at culvert on U.S. Highway 52, 3.4 mi southeast of New Palestine.
03361850	Buck Creek at Acton, Ind.	Lat 39°39'25", long 85°57'27", in NW¼SE¼ sec. 15, T. 14 N., R. 5 E., Marion County, on left bank 30 ft downstream from McGregor Road bridge, 0.5 mi east of Acton, and 4.1 mi upstream from mouth.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03361890	Gilmore Creek near Bargersville, Ind.	Lat 39°30'44", long 86°08'26", in NE¼NE¼SE¼ sec. 1, T. 12 N., R. 3 E., Johnson County, at culvert on State Highway 144, 1.0 mi southeast of State Highway 135 east of Bargersville.
03362000	Youngs Creek near Edinburg, Ind.	Lat 39°25'08", long 86°00'18", in SE¼SW¼ sec. 5, T. 11 N., R. 5 E., Johnson County.
03362500	Sugar Creek near Edinburg, Ind.	Lat 39°21'39", long 85°59'51", in SW¼SE¼ sec. 29, T. 11 N., R. 5 E., Johnson County.
03363000	Driftwood River near Edinburg, Ind.	Lat 39°20'21", long 85°59'11", in NW¼SW¼ sec. 4, T. 10 N., R. 5 E., Bartholomew County.
03363450	Little Flatrock Creek at Milroy, Ind.	Lat 39°29'49", long 85°28'24", in NE¼NW¼ sec. 13, T. 12 N., R. 9 E., Rush County, at bridge on State Highway 244, and at west edge of Milroy.
03363500	Flatrock River at St. Paul, Ind.	Lat 39°25'03", long 85°38'03", in SE¼NE¼ sec. 9, T. 11 N., R. 8 E., Shelby County.
03363900	Flatrock River at Columbus, Ind.	Lat 39°14'06", long 85°55'36", in NE¼SW¼ sec. 12, T. 9 N., R. 5 E., Bartholomew County, at bridge on U.S. Highway 31, and 2.6 mi upstream from mouth.
03364000	East Fork White River at Columbus, Ind.	Lat 39°12'00", long 85°55'32", in NE¼NW¼ sec. 26, T. 9 N., R. 5 E., Bartholomew County, and at mile 238.7.
03364100	Tough Creek near Norristown, Ind.	Lat 39°22'19", long 85°45'38", in SW¼SW¼NW¼ sec. 28, T. 11 N., R. 7 E., Shelby County, at culvert 0.5 mi north of Norristown.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03364200	Haw Creek near Clifford, Ind.	Lat 39°16'04", long 85°51'22", in NW¼SW¼ sec. 34, T. 10 N., R. 6 E., Bartholomew County, on left bank 20 ft downstream from bridge on County Road 450 North, 1.2 mi southeast of Clifford, 5.8 mi northeast of Columbus, 7.6 mi upstream from mouth.
03364500	Clifty Creek at Hartsville, Ind.	Lat 39°16'25", long 85°42'10", in NW¼NW¼ sec. 36, T. 10 N., R. 7 E., Bartholomew County.
03364570	Fall Fork Clifty Creek tributary near Horace, Ind.	Lat 39°16'01", long 85°34'30", in SW¼SW¼NW¼ sec. 31, T. 10 N., R. 9 E., Decatur County, at culvert on State Highway 3, 2.8 mi south of State Highway 46, 0.4 mi north of Horace.
03365000	Sand Creek near Brewersville, Ind.	Lat 39°05'03", long 85°39'32", in NW¼NE¼ sec. 5, T. 7 N., R. 6 E., Jennings County.
03365500	East Fork White River at Seymour, Ind.	Lat 38°58'57", long 85°53'57", in NW¼NE¼ sec. 7, T. 6 N., R. 6 E., Jackson County, and at mile 214.6.
03366200	Harberts Creek near Madison, Ind.	Lat 38°46'55", long 85°29'08", in SW¼SE¼ sec. 14, T. 4 N., R. 9 E., Jefferson County, attached to left downstream wingwall of bridge on County Road 533 West, 0.2 mi west of Smyrna, 3.7 mi upstream from Big Creek, 4 mi northwest of Madison.
03366400	Lewis Creek tributary near Kent, Ind.	Lat 38°44'13", long 85°34'39", in NW¼NE¼NE¼ sec. 2, T. 3 N., R. 8 E., Jefferson County, on State Highway 256, 2.8 mi west of Kent.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03366500	Muscatatuck River near Deputy, Ind.	Lat 38°48'15", long 85°40'26", in SW¼NE¼ sec. 7, T. 4 N., R. 8 E., Jefferson County.
03367600	Flat Creek tributary at New Frankfort, Ind.	Lat 38°44'18", long 85°42'50", in NE¼SE¼SW¼ sec. 35, T. 4 N., R. 7 E., Scott County, at culvert on State Highway 256, 0.2 mi northwest of State Highway 203.
03368000	Brush Creek near Nebraska, Ind.	Lat 39°04'13", long 85°29'10", in NW¼NE¼ sec. 11, T. 7 N., R. 9 E., Jennings County, at downstream side of county road bridge, 1.5 mi northwest of Nebraska.
03369000	Vernon Fork near Butlerville, Ind.	Lat 39°02'55", long 85°32'40", in NW¼SE¼ sec. 17, T. 7 N., R. 9 E., Jennings County.
03369500	Vernon Fork at Vernon, Ind.	Lat 38°58'34", long 85°37'13", in NW¼SE¼ sec. 10, T. 6 N., R. 8 E., Jennings County.
03369700	Sixmile Creek tributary near North Vernon, Ind.	Lat 39°01'55", long 85°38'24", in NW¼SW¼SE¼ sec. 21, T. 7 N., R. 8 E., Jennings County, at culvert on State Highway 3, 1.2 mi north of State Highway 7 in North Vernon.
03370100	Blau ditch tributary near Crothersville, Ind.	Lat 38°48'17", long 85°50'25", in SW¼SW¼NE¼ sec. 10, T. 4 N., R. 6 E., Jackson County, at culvert on U.S. Highway 31, 1.4 mi north of Crothersville.
03371500	East Fork White River near Bedford, Ind.	Lat 38°46'10", long 86°24'30",in SW¼NE¼ sec. 21, T. 4 N., R. 1 E., Lawrence County, at bridge on county road, 7.8 mi southeast of Bedford, and at mile 153.3.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03371520	Back Creek at Leesville, Ind.	Lat 38°50'48", long 86°18'06", in SW¼SE¼ sec. 21, T. 5 N., R. 2 E., Lawrence County, on left bank at downstream side of county road bridge, 0.9 mile west of Leesville, 2.5 mi upstream from Jones Defeat Hollow and 7 mi above mouth.
03371630	North Fork Salt Creek tributary near Nashville, Ind.	Lat 39°11'38", long 86°12'11", in NE¼NE¼NW¼ sec. 28, T. 9 N., R. 3 E., Brown County, at culvert on State Highway 46, 2.6 mi east of State Highway 135 in Nashville.
03371650	North Fork Salt Creek at Nashville, Ind.	Lat 39°12'06", long 86°14'51", in NW¼SW¼ sec. 19, T. 9 N., R. 3 E., Brown County.
03372300	Stephens Creek near Bloomington, Ind.	Lat 39°10'11", long 86°25'07", in NE¼NW¼ sec. 4, T. 8 N., R. 1 E., Monroe County, on downstream side of right pier of bridge on State Highway 46, 0.2 mi downstream from Kerr Creek, 4.0 mi west of Belmont, and 6.1 mi east of Bloomington.
03372680	Clear Creek tributary near Bloomington, Ind.	Lat 39°04'24", long 86°32'39", in SW¼SW¼NE¼ sec. 5, T. 7 N., R. 1 W., Monroe County, at culvert on State Highway 37, 5.5 mi south of Bloomington.
03373200	Indian Creek near Springville, Ind.	Lat 38°57'01", long 86°40'30", in SE¼SW¼ sec. 18, T. 6 N., R. 2 W., Lawrence County.
03373240	Spring Creek tributary near Springville, Ind.	Lat 38°54'41", long 86°39'09", in SE¼SW¼NE¼ sec. 32, T. 6 N., R. 2 W., Lawrence County, at culvert on State Highway 58, 6.6 mi northwest of State Highway 37 in Oolitic.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03373500	East Fork White River at Shoals, Ind.	Lat 38°40'02", long 86°47'32", in SW¼NW¼ sec. 30, T. 3 N., R. 3 W., Martin County, at bridge on U.S. Highway 50 at Shoals, and at mile 105.3.
03373680	French Lick Creek tributary near French Lick, Ind.	Lat 38°30'08", long 86°36'20", in SW¼NW¼SW¼ sec. 23, T. 1 N., R. 2 W., Orange County, at culvert on State Highway 145, 4.3 mi south of intersection of State Highways 145 and 56 in French Lick.
03373700	Lost River near West Baden Springs, Ind.	Lat 38°35'10", long 86°38'03", in SW¼SE¼ sec. 21, T. 2 N., R. 2 W., Orange County, at bridge on U.S. Highway 150, 1.7 mi northwest of West Baden Springs, and at mile 34.8.
03373850	Slate Creek tributary near Haysville, Ind.	Lat 38°33'30", long 86°54'10", in NE¼SW¼SW¼ sec. 31, T. 2 N., R. 4 W., Martin County, at culvert on U.S. Highway 231, 5.5 mi north of intersection of U.S. Highway 231 and State Highway 56, in Haysville.
03374000	White River at Petersburg, Ind.	Lat 38°30'39", long 87°17'22", in SE¼SW¼ sec. 15, T. 1 N., R. 8 W., Pike County, at bridge on State Highway 61, 1.4 mi north of Petersburg, and at mile 45.7.
03374455	Patoka River near Hardinsburg, Ind.	Lat 38°26'41", long 86°23'14", in NW¼SE¼ sec. 10, T. 1 S., R. 1 E., Orange County, Hydrologic Unit 05120209, 0.3 mi downstream from Fudge Creek, 0.7 mi northeast of Valeene, 6.0 mi southwest of Hardinsburg, and at mi 158.0.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03374500	Patoka River near Ellsworth, Ind.	Lat 38°26'39", long 86°43'31", in SW¼SE¼ sec. 10, T. 2 S., R. 3 W., Dubois County.
03375500	Patoka River at Jasper, Ind.	Lat 38°24'49", long 86°52'36", in NW¼SW¼ sec. 20, T. 1 S., R. 4 W., Dubois County.
03376230	Shiloh drain near Jasper, Ind.	Lat 38°24'26", long 86°58'47", in NW¼NW¼NW¼ sec. 28, T. 15 N., R. 5 W., Dubois County, at culvert on State Highway 56, at Ireland, 2.8 mi northwest of Jasper.
03376260	Flat Creek near Otwell, Ind.	Lat 38°26'12", long 87°07'52", in SE¼SE¼ sec. 12, T. 1 S., R. 7 W., Pike County, at bridge on State Highway 56, 2.5 mi southeast of Otwell, and at mile 10.9.
033762785	Rock Creek near Velpen, Ind.	Lat 38°18'13", long 87°04'10", in NW¼NW¼ sec. 34, T. 2 S., R. 6 W., Dubois County, at bridge on State Highway 64, 0.15 mi east of Pike-Dubois County line and 4.0 mi southeast of Velpen.
03376340	Patoka River tributary near Glezen, Ind.	Lat 38°23'41", long 87°19'05", in NE¼SE¼SE¼ sec. 29, T. 1 S., R. 8 W., Pike County, at culvert on State Highway 57, 7.9 mi south of intersection of State Highways 61, 56, and 57 in Petersburg.
03376350	South Fork Patoka River near Spurgeon, Ind.	Lat 38°17'50", long 87°15'39", in SE¼NE¼ sec. 35, T. 2 S., R. 8 W., Pike County, at bridge on State Highway 61, 3.1 mi north of Spurgeon, and at mile 8.0.

Table 4.--Locations of streamflow stations used in this report--Continued

Station number	Name	Location
03376500	Patoka River near Princeton, Ind.	Lat 38°23'30", long 87°32'55", in Location 107, T. 1 S., R. 10 W., Gibson County.
03376600	Patoka River tributary near Patoka, Ind.	Lat 38°23'08", long 87°35'21", in SE¼SW¼NW¼ sec. 36, T. 15 N., R. 11 W., Gibson County, at culvert on old U.S. Highway 41, 1.2 mi south of Patoka River at Patoka.
03377500	Wabash River at Mount Carmel, Ill.	Lat 38°24'07", long 87°45'10", in SE¼NW¼ sec. 28, T. 1 S., R. 12 W., Wabash County, Ill., at Southern Railway bridge at Mount Carmel, and at mile 94.4.
03378450	Black River near Poseyville, Ind.	Lat 38°12'00", long 87°46'05", on line between SW¼SW¼ sec. 5 and SE¼SE¼ sec. 6, T. 4 S., R. 12 W., Posey County, at bridge on State Highway 165, and 2.0 mi north of State Highway 68 in Poseyville.
03378550	Big Creek near Wadesville, Ind.	Lat 38°04'58", long 87°46'10", in SW¼SW¼ sec. 16, T. 5 S., R. 12 W., Posey County, at bridge on U.S. Highway 460, and 1.6 mi southeast of Wadesville.
03378590	Olive Creek tributary near Solitude, Ind.	Lat 38°00'14", long 87°53'57", in NW¼SE¼NW¼ sec. 17, T. 6 S., R. 13 W., Posey County, at culvert on State Highway 69, 0.65 mi south of Solitude.

Table 5.--Locations of reservoir sites used in this report

Station number	Name	Location
03374498	Patoka Lake near Cuzco, Ind.	Lat 38°25'58", long 86°42'30", in SW¼NE¼ sec. 14, T. 1 S., R. 3 W., Dubois County, in discharge tower of reservoir on Patoka River, 2.9 mi south of Cuzco, and 5.0 mi upstream from Dillion Creek.
03358900	Cagles Mill Lake near Manhattan, Ind.	Lat 39°29'14", long 86°55'02", in NE¼NW¼ sec. 13, T. 12 N., R. 5 W., Putnam County, in discharge tower of reservoir on Mill Creek, 2.7 mi above mouth, and 5.8 mi south of Manhattan.
03372400	Monroe Lake near Harrodsburg, Ind.	Lat 39°00'24", long 86°30'56", in SW¼SW¼ sec. 27, T. 7 N., R. 1 W., Monroe County, in discharge tower of reservoir on Salt Creek, 2.2 mi southeast of Harrodsburg, and 26.1 mi upstream from mouth.
03275990	Brookville Lake at Brookville, Ind.	Lat 39°26'27", long 85°00'10", in NE¼SE¼ sec. 17, T. 9 N., R. 2 W., Franklin County, in discharge tower of reservoir on East Fork Whitewater River, and 2.2 mi above mouth.

Table 6.--Locations of observation wells used in this report

Well name	Location
Orange 2	Lat 38°37'02", long 86°21'56", in NE¼SE¼SE¼ sec. 11, T. 2 N., R. 1 E., Orange County, 0.7 mi south of State Highway 337 and Potato Road intersection, and 5.6 mi southeast of Orleans.
Morgan 4	Lat 39°34'23", long 86°16'10", in NW¼NW¼NW¼ sec. 13, T. 13 N., R. 2 E., Morgan County, on east side of County Road 850 East, 0.4 mi north of County Road 950 North, and 1.1 mi north of Waverly.
Harrison 8	Lat 38°23'23", long 86°04'45", in NW¼NW¼NE¼ sec. 33, T. 1 S., R. 4 E., Harrison County, on county road right-of-way, 2.0 mi southeast of Palmyra.